



Clean &
Green

Sustainable Riverside

**Clean & Green Task Force
Report**

February 6, 2007

CONTENTS	<i>i</i>
TASK FORCE MEMBERSHIP	iv
INTRODUCTION	v
EXECUTIVE SUMMARY	vii
BENCHMARKS TO A CLEAN AND GREEN RIVERSIDE	x
Riverside Public Utilities	
Green Efforts at UCR	
UC Policy on Green Buildings	
La Sierra Environmental Awareness Campaign	
<hr/>	
SECTION 1.0	
PUBLIC POLICIES FOR A SUSTAINABLE RIVERSIDE:	1.1
DRAFT Policy Statement	1.2
Regional Sustainability	
"Clean" Riverside	
"Green" Riverside	
COST/BENEFIT SUMMARY	1.5
REGULATORY DOCUMENTS AND PROGRAMS	1.7
Zoning Code review and revisions for sustainable development	
Building Codes	
Citywide Design Guidelines review/revision for sustainable design	
Public Works Standards review/revision for sustainable development	
Fire Code/standards review/revision for sustainable development	
Adopt Parks and Recreation Sustainability standards	
Vigorous enforcement of litter and dumping ordinances	
POLICY/PROGRAM RECOMMENDATIONS	1.8
INCENTIVE PROGRAMS	1.10
Infill Development Program	
Adopt Green Builder program	
Funding for Sustainable Programs	
Green Rate Utility Structure	
POLICY/PROGRAM RECOMMENDATIONS	1.10
PILOT PROGRAMS AND TEST PLATFORMS:	1.11
POLICY/PROGRAM RECOMMENDATIONS	1.11
URBAN LANDSCAPE: CITY OF TREES	1.13
Green Print program: Native/naturalized planting	
Sustainable Landscape	
Waterwise Landscape	
Sustainable Irrigation	
Structural Soils	
Trees and Sidewalks	
Tree Topping and Hat-Racking	
POLICY/PROGRAM RECOMMENDATIONS	1.13 - 1.17
EDUCATION AND PUBLIC AWARENESS	1.18
POLICY/PROGRAM RECOMMENDATIONS	1.18
<hr/>	
SECTION 2.0	
REGIONAL SUSTAINABILITY ISSUES	2.1
CLEAN AIR:	2.1
Report to the City Council	
Indoor air Quality	

POLICY/PROGRAM RECOMMENDATIONS	2.2
TRANSIT, TRANSPORTATION AND TRAILS:	2.3
Transit friendly community design, TOD/transit oasis program, regional planning coordination	
Pedestrian and Bicycle-Friendly Goals, Policies and Actions	
Bus Transit	
POLICY/PROGRAM RECOMMENDATIONS	2.4, 2.6 - 2.7
<hr/>	
SECTION 3.0	
SUSTAINABLE INFRASTRUCTURE	3.1
CLEAN WATER:	3.1
Storm water runoff	
Trees and the Watershed	
Grey water system approval at the dwelling and project level.	
POLICY/PROGRAM RECOMMENDATIONS	3.1
<hr/>	
ENERGY: EFFICIENT, RENEWABLE AND CONSERVED	3.3
Conservation	
Efficient Use	
Local Generation	
Alternative Fuels	
POLICY/PROGRAM RECOMMENDATIONS	3.4
<hr/>	
SECTION 4.0	
GREEN BUILDING PROGRAMS	4.1
POLICY/PROGRAM RECOMMENDATIONS	4.2
LEEDS PROGRAM:	4.3
New commercial construction and major renovation projects (LEED-NC)	
Existing building operations (LEED-EB)	
Commercial interiors projects (LEED-CI)	
Core and shell projects (LEED-CS)	
POLICY/PROGRAM RECOMMENDATIONS	4.4
GREEN BUILDER PROGRAMS	4.5
CBIA, NAHB AND LEED Home Rating Program	
POLICY/PROGRAM RECOMMENDATIONS	4.5
WORKFORCE GREEN HOUSING	4.6
POLICY/PROGRAM RECOMMENDATIONS	4.8
<hr/>	
SECTION 5.0	
OPERATIONAL SUSTAINABILITY	5.1
CITY FUNCTIONS	5.1
City departmental Sustainability Assessment: surveys and evaluations,	
City sponsored "Sustainable Business Assessments"	
Office of Sustainable Action, Sustainable Coordinator	
POLICY/PROGRAM RECOMMENDATIONS	5.1
GREEN GOVERNMENT	5.1
Sustainable Purchasing Policy	
Waste Treatment	
Water Conservation and Sustainable Wastewater Treatment	
Energy Efficiency	
Incubator and Business Support	
POLICY/PROGRAM RECOMMENDATIONS	5.1 -5.3
<hr/>	

SECTION 6.0

SUSTAINABLE ENTERPRISE

6.1

SUSTAINABLE BUSINESS DEVELOPMENT

GREEN MANUFACTURING

RECYCLING BUSINESSES

Electric appliances, computers Electronic waste programs: www.ease-e-waste.com

Composting

Alternative Power sources

POLICY/PROGRAM RECOMMENDATIONS

6.1

CLEARINGHOUSE FOR GREEN MATERIALS

6.2

City sponsored "clearinghouse" for sustainable building materials, systems and equipment, landscape materials, etc.

POLICY/PROGRAM RECOMMENDATIONS

6.2

CLEAN AND GREEN TASK FORCE

Mayor Ronald Loveridge
Jane Block, Chairperson
Bill Warkentin, Chairperson
Brenda Flowers, Office of the Mayor
Atoya Mendez, Riverside Public Utilities

Staff

Brenda Flowers	Office of the Mayor
Atoya Mendez	RPU, Renewable Resources

Community Members

Jane Block	
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Nita Bullock	University of California, Riverside
Patricia Byrd	American Lung Association
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Jesse Hairston	Riverside Unified School District
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Paul Jessup	Alvord Unified School District
Shelli Lamb	Riverside-Corona Conservation District
Tim Maloney	Community Works Design Group
Pamela Marquardt	American Heart Association
Nancy Melendez	KRCB
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Dave Rogers	California Urban Forest Council
Phil Rosentrater	Western Municipal Water District
Scott Richardson	Riverside Transit Agency
Ron Smith	Urban Forester
Pete Staylor	Riverside Bike Club
Josiah Trenham	Saint Andrews Orthodox Church
William Warkentin	Warkentin Architects
Terry Wold	Sierra Club San Geronio Chapter
Ralph Perez	RCC
Dr. John Perumal	La Sierra University

CLEAN AND GREEN TASK FORCE

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"Awareness of environmental problems is widespread today, both in the developed and the developing world. Surveys demonstrate that concern is greatest among the younger generations, thus promising a brighter future...Environmental issues are ever-present in the media nowadays, in contrast to their merely tangential, symbolic presence at the beginning of the 1990s.."

Manual Ruano, ECOURBANISM, Editorial Gustavo Gilli, 1999

"There are cities that produce more stimulus and delight than can be borne, but it is rare when they are products of the industrial revolution or its aftermath. If we can create the humane city, rather than the city of bondage to toil, then the choice of city or countryside will be between to excellences, each indispensable, each different both complementary, both life-enhancing. Man in Nature.."

Ian L. McHarg, Design with Nature, 1967

"Most of these arguments for the advantages of cities have been around for many centuries, of course, and they are why the great cities of the world are the way they are: dense, varied, exciting, economically resilient, and often strikingly beautiful places. The only pity is that we don't have them in America any more, and have to take petroleum-burning airplanes to visit them."

Ernest Callenbach, Sustainable Cities

INTRODUCTION

The making of a clean and green city depends on civic leadership with the political will to adopt and fund needed programs and on an equally committed and educated citizenry willing to implement and support both public policy and private initiatives. We believe both requirements are met in Riverside and we need only a comprehensive program to focus our collective efforts to achieving full clean and green status.

The Clean and Green Task Force, as constituted by the Mayor, was considerably more practical than theoretical since the majority of our membership work in arenas that demand pragmatic performance, not academic scholarship as the measure of success. Yet we understand the need for policy based on sound principles and an understanding of sustainability at the civic level. The reader will find philosophical policy statements contrasted with specific recommendations for trees and sidewalks. The general policy narratives set the stage for a broad public discussion of clean and green issues; specific recommendations are focused on areas that can be immediately investigated, designs proposed and solutions implemented.

Early on we began to identify existing programs and discovered Riverside is already a clean and green city, our task then was to define a process by which the city becomes cleaner and greener on many fronts, while initiating some new policies and programs in areas currently unaddressed.

The first component of this report lists existing programs as a benchmark upon which we recommend both expanded and new programs. The list includes official city programs, water and power agency programs and efforts at local schools and universities, the combined impact of which is considerable. Interestingly, none of the educational institutions limit their sustainable efforts to energy efficiency or green building; their programs are diverse and spring from student, staff and faculty interests; involve hard (green building), soft (landscape), procedural (Earth Day celebration) and content oriented (undergraduate and graduate) degree programs; and include elementary and middle school curriculum packages.

The second component discusses our view of the need for additional programs and both general and specific recommendations for subsequent action. The third component includes printed material as example and validation of our recommendations. The material is quite limited, however, for the simple reason that we collected thousands of pages of references and could include but a small and focused portion of that volume.

A serious student/practitioner of the sustainable city movement will notice some sizable gaps in attention and focus. First, the critical issue of transportation and transit: The task force simply had insufficient time to address the issue in the depth and breadth required for inclusion in this report. We strongly recommend the city undertake continuing and expanded investigations and programs to relieve congestion, reduce pollution and develop a transit infrastructure suitable to our local market and the nature of development in Riverside.

Second, the most commanding issue of sustainable living, fresh water and its continuing supply, requires further investigation and is being addressed by regional and state level working groups and agencies. Again we urge participation and expansion of our local efforts to ensure an adequate fresh water supply for all time.

Third, we believe preservation of the natural and man-made environment is a critical component of a clean and green Riverside, however, the historic aspects are currently handled by staff, the Cultural Heritage Board and local preservation advocates. While natural preservation is advocated by any number of effective environmental groups and projects are required to be certified through CEQA (California Environmental Quality Act), we believe local programs should be supported such as the arroyo, hillside and citrus orchard preservation efforts.

Lastly, the entire subject of energy efficiency, alternative fuels and local/on-site power generation requires further study and program development. The Riverside Public Utilities Department has initiated some excellent programs that need additional support and funding, incentives to achieve broad market acceptance and educational programs to stimulate industry involvement and investment. Alternative fuels for automobile and power generation is a broad national topic gathering increasing attention and, we advocate, directed focus in a comprehensive national energy strategy.

These gaps are prime topics for subsequent research investigations and we urge they be included in follow-up programs.

As a co-chair of the task force, I am grateful for the knowledge of and commitment to sustainability that exists in our community and am personally challenged to accelerate my professional education in relevant areas of interest. Perhaps the most important lesson learned thus far is recognition that a Sustainable Riverside is a learning path of both journey and destination: it is an ethic, a commitment, a life-long investigation, a civic and personal growth process and the inheritance we leave our children as stewards of their future environment.

We view this report and our recommendations as a small but important step along that path.

CLEAN AND GREEN TASK FORCE

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*"We should develop a focus: a game plan/road map for becoming a Clean and Green city.
Therefore, I am appointing a Clean and Green Task Force.."*

Mayor Loveridge, Mayor's report to the City Council, August 9, 2005

"In order to make Riverside into an acknowledged "clean and green" city we must adopt the appropriate city policies and programs; develop and grant credits for the private sector; provide incentives for clean and green development; and ensure sustainable operations and maintenance of all public and private green facilities. Our mission is to define these ideals in detail so that each component becomes reality at the appropriate time."

Clean and Green Task Force

EXECUTIVE SUMMARY

Since the inception of the Clean and Green Task Force, the group has met in full committee and as focused working groups, toured a green facility and received briefings on several local programs. We have reached several overarching conclusions: First, Riverside has enormous potential to be a "Clean and Green" city that exemplifies sustainable living and becomes a model for inland sustainable action. Second, Riverside has an established foundation for sustainable living and civic action spearheaded by the Riverside Public Utilities programs in renewable energy sources and photo-voltaic power generation installations. Third, Riverside has a core of interested and committed residents ready to devote themselves to a sustainable future lead by our universities and public utilities.

Sustainability in the civic context means maximizing energy efficiency; optimizing resource use while minimizing negative environmental impacts; minimizing waste production and pollution; capturing the benefits of natural processes while minimizing damage from natural events and meeting the economic and social needs of all its people in a manner that does not degrade or destroy the productivity of its natural and man-made systems.

As the task force reviewed existing programs and discussed future applications, we came to understand that the range of issues pertaining to sustainable living can be as broad or as narrow as we choose. Our review of other city's programs places our recommendations in the middle ground of possible programs. We identified the following broad areas of interest for subsequent consideration:

- Public Policies, Regulations, Guidelines and Implementation Programs
- Regional Sustainability Issues
- Sustainable Infrastructure
- Green Building Programs
- Facilities Operations and Maintenance
- Sustainable Enterprise

In order to develop these concepts into formal policies and programs, we recommend the City adopt a Sustainable Riverside Policy Statement leading to the crafting of a Sustainability Element of the General Plan. We further recommend this Sustainability Element set the stage for the integration of a diverse range of ideas, issues, concerns and programs so that as formal principles and programs are developed, their implementation will inevitably yield a Sustainable Riverside.

Our task was to create a strategic blueprint/road map for a Sustainable Riverside. In general, our recommendations are to: 1) endorse Sustainable Riverside as a vital and necessary civic goal; 2) commit the resources necessary to explore each of the key areas of interest; 3) assess our current capabilities and policy status; 4) develop new policies, guidelines and

codes/regulations; 5) create implementation programs that ensure sustainable action and 6) monitor and measure progress toward a Sustainable Riverside.

Sustainable thinking leads to a special kind of decision-making, i.e., choices based on a commitment to bequeath our children a place better for our having served as steward of their environmental inheritance, a clearly defined civic conservation ethic and a deep regard for the quality of the total environment, both natural and man-made.

The genuine benefits of measurable improvements in the quality of the natural and man-made environment are both obvious and too numerous to list herein. A sustainable Riverside is committed to a *continual improvement in the quality of both the built and natural environment* resulting in a legacy of genuine value.

A Sustainable Riverside embodies a *civic conservation ethic* that mandates resource conservation as a prime decision-making criteria in the design, development, operation and management of our man-made environment while preserving and protecting the natural setting out of which we carve our human habitat.

Lastly, a Sustainable Riverside demonstrates a *deep regard for the value of the natural and man-made environments*. While raw land will inevitably require conversion to human habitat, the manner in which that conversion takes place (development) and the qualities we impart to both the process and the built environment will seriously impact, for better or worse, the surrounding and included natural environment.

Creating a Sustainable Riverside requires the City to recognize the following five general procedural goals:

- Provide useful and timely data to inform our residents about the resources available on living sustainably and keeping our city clean;
- Adopt General Plan policies that integrate land use, circulation, open space, design elements, energy use and conservation practices so that a Sustainable Riverside is the natural and inevitable consequence of the proper application of those policies;
- Ensure policy follow-through, adopt implementation plans, updated programs and revised regulations that facilitate sustainable development, maintenance and operations;
- The City also recognizes the need to lead by example and commits to developing pilot projects that demonstrate the benefits of proven sustainable action at the cutting edge.
- Particularly in the areas of clean air, clean water and traffic congestion, the city will work with regional agencies and adjacent cities and counties to design and implement regional programs to which Riverside contributes and receives benefits

SUMMARY RECOMMENDATION

As in all things, there is both more and less that can be done, however, we find the following list of programs reasonably inclusive, with the potential for attainable results yielding genuine benefits for the city and its citizens. Should the City Council wish to pursue broader objectives, they can be included at any time just as over-reaching programs may be reduced as appropriate. The remainder of this report offers specific thoughts, lists resources and discusses the range and breadth of our recommendations. The public policy issues we consider essential to a Sustainable Riverside, after that, the list should be considered a menu of issues from which the city can select and prioritize for implementation.

In general the recommendations follow a process of program definition (an initial definition is provided herein), appointment of a focused group of

interested citizens and qualified professionals, funding and/or staff support to assure meaningful research and deliberations, preparation of detailed reports recommending specific actions complete with cost/benefit analyses, schedules for implementation and recommendations for monitoring and management.

CLEAN AND GREEN TASK FORCE

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INTRODUCTION

CITY OF RIVERSIDE CLEAN AND GREEN BENCHMARKS

Tree City USA for past 18 years (must meet 4 standards)

America in Bloom Champion in Urban Forestry (outstanding urban forestry policy)

Most Livable City

All America City

Riverside received recognition by the South Coast Air Quality Management District at their

Clean Air Awards in October 2004 in the category of Model Community Achievement
Clean Air Challenge – an educational program for junior and senior high school students. We
have presented three workshops for 46 teachers in Riverside reaching approximately
5,000 students. A fourth workshop is scheduled for May 8, 2006

GoRiverside – a citizens' review of the local bus system with the goal of encouraging new ways
to look at transit to attract a different rider population

Clean Fuel Fleet Program – under the guidance of Fleet Manager, Martin Bowman, we continue
to convert more vehicles to alternative fuels. Currently 38% of the fleet is alternative
fuel vehicles (AFV). Riverside was one of five cities in the South Coast Air Basin to
have a hydrogen fueling station. We now have five hydrogen hybrid internal
combustion vehicles

Ride Share Programs - bus subsidies , car pool

Walkable Community/trails/bicycle path

Freeway signs for AFV – signage for alternative fuels for the public. Cal Trans should complete
the signage by the end of April. City signs are already in place. A hydrogen logo is
being added

Keep Riverside Clean & Beautiful—national award winner for efforts in litter prevention,
beautification and waste reduction

Victoria Avenue Forever (beautification, historic preservation)

C.U.R.E. (61% diversion, recycling, HHW)

"Riverside to the Seaside" annual bike ride

Riverside Public Utilities

Business

- ☐ AC Incentives
- ☐ Custom Energy Efficient Technology Grants
- ☐ Energy Management Technical Assistance Services
- ☐ Energy Innovation Grants
- ☐ Energy Star Rated Products Incentives
- ☐ Lighting Incentives
- ☐ New Construction Incentives
- ☐ Pool & Spa Pump Incentives
- ☐ Premium Motors Incentives
- ☐ Shade Tree Planting Incentives
- ☐ Thermal Energy Storage & Feasibility Study Incentives
- ☐ Green Power Programs

Residential

- ☐ Tree Power Program
- ☐ Energy Efficient Rebate Programs
- ☐ Solar Incentives
- ☐ Grease Waste to Energy

Sun Power

- ☐ Photovoltaic Projects, Indiana Ave Apartments, RPU building, Janet Goeske Center, Riverside Airport, Metrolink Stations to generate power

UCR recognized for Outstanding Waste Reduction Efforts in 2005 by KRCB

The Press Enterprise recognized for Outstanding Waste Reduction Efforts 2004 by KRCB

La Sierra University Environmental Program—administrative policy, student awareness thru department competition

Waterwise Landscaping

- ☐ Western Municipal Water District Demonstration Garden
- ☐ Gateway Entry monuments (completion end 2006)

Parks

- ☐ 52 public parks within the City on twenty-three hundred acres

LEED Buildings

- ☐ Orange Terrace Branch Library (completion 2008)
- ☐ Others?

SUMMARY OF GREEN EFFORTS AT UNIVERSITY OF CALIFORNIA, RIVERSIDE (UCR) (REPORT TO THE RIVERSIDE CITY COUNCIL BY CLEAN & CLEAN TASK FORCE)

"NEW INSTITUTE WILL OFFER POLICY MAKERS GLIMPSES INTO THE ENVIRONMENTAL FUTURE"

UCR has created the Environmental Research Institute which merges the expertise of UCR's Center for Conservation Biology, the College of Engineering Center for Environmental Research and Technology (CE-CERT), the Air Pollution Research Center, the Center for Water Resources and the Edward J. Blakely Center for Sustainable Suburban Development. The institute will make practical use of existing research on air, water, energy consumption and growth and development of this area for provide policy makers with the tools and information they need to understand how one area of environmental policy can affect other areas of environmental policy.

Winter 2006 edition of UCR's Fiat Lux magazine.

UC Policy on Green Buildings

- On July 17, 2003, The Regents of the University of California adopted a system wide policy on Green Building Standards and Clean Energy Standards
- The policy is used in development of new facilities, rehab of old facilities and in energy conservation efforts on campus

○

UCR Policy and Programs on Sustainability

- A chapter on Resource Conservation and Environmental Stewardship is located in the campus 2005 Long Range Development Plan (LRDP)

○ The campus maintains a campus baseline for projects which is based on the LEED format and the UC Policy on Green Buildings.

- The LRDP may be viewed on the campus website at www.ucrapb.ucr.edu under available documents

○ Sustainable UCR, a newly formed student group on campus, is developing meetings and programs to foster green practices and programs. Contact information is through the Associated Students of UCR at www.asucr.ucr.edu. Current projects/opportunities include establishment of a Farmer's Market. Recycling, Garden, Earth Day Initiative and Sustainability Conference.

• Multi-Modal Transportation Management Strategy (MMTMS)

- Developed in 2004, the MMTMS identifies a multi modal transportation strategy as well as an implementation and phasing plan for development of the transportation network on campus. The network includes enhancing the pedestrian and bicycling experience

on campus, developing a campus transit system as well as reaching out to the immediate neighborhood to encouraging the campus community to walk, bike or ride the trolley to get to campus thus reducing the need for the private car.

- The MMTMS also includes a section on wayfinding which includes development of a sign program to make the campus facilities easy to find whether by car, bicycle or on foot.
- The MMTMS may be viewed on the campus website at www.ucrapb.ucr.edu under available documents.

- **Energy Efficiency**

- Almost all of the instruction and research facilities on campus are linked to the central utility plant which provides chilled water and steam to heat and cool the facilities.
- Potable water and chilled water are pumped separately to holding tanks at the higher elevations at night and released by gravity during the daytime hours.
- The campus has two thermal energy storage tanks for chilled water at this time and is considering installing a third so that all chilled water necessary for cooling the campus will be chilled and pumped during the low energy requiring nighttime hours, eliminating the need for energy during the peak daytime hours for cooling the campus.
- As appropriate, low energy requiring appliances, lights and systems have been installed during replacements or renovations to save on water, electricity, and natural gas use. The campus is pro-active in reducing utility needs.

- **Electric Vehicles**

- Electric vehicles are available on campus for use/lease through the Center for Environmental Research and Technology (CE-CERT)
- Campus units are replacing internal combustion vehicles with electric when possible – Ex. Most units use GEM carts (small electronic vehicles) for daily tasks around campus, even for catering campus events.

- **Ride Share/Alternative Transportation Programs**

- Available through the campus Transportation and Parking Services Unit
- Web site is located at www.parking.ucr.edu.

- **Environmental Programs offered at UCR**

- Undergraduate Degrees in Environmental Science
 - Natural Science
 - Social Science
 - Soil Science
 - Environmental Toxicology
 - Environmental Education
- Graduate Degrees in Environmental Science
 - Soil and Water Sciences (both M.S. and Ph.D)
 - Interdepartmental
 - Environmental Sciences
 - Environmental Toxicology
 - Microbiology
 - Chemical and Environmental Engineering
 - Economics

UNIVERSITY OF CALIFORNIA POLICY ON GREEN BUILDING DESIGN AND CLEAN ENERGY STANDARDS

Resource sustainability is critically important to the University of California, the State of California, and the nation. Efficient energy use is central to this objective, and renewable energy and energy-conservation projects provide a means to stabilize campus budgets, increase environmental awareness, reduce the environmental consequences of University activities, and provide educational leadership for the 21st century.

On July 17, 2003, The Regents of the University expressed their support for a Presidential policy to promote "...the principles of energy efficiency and sustainability in the planning, financing, design, construction, renewal, maintenance, operation, space management, facilities utilization, and decommissioning of facilities and infrastructure to the fullest extent possible, consistent with budgetary constraints and regulatory and programmatic requirements."

The University of California is committed to improving the University's effect on the environment and reducing the University's dependence on non-renewable energy. Guidelines for implementing practices in support of Green Building Design and Clean Energy Standards are explained in detail in the following plan for achieving these goals.

I.Green Building Design

- a. Given the importance of energy efficiency to Green Building design, the University has set a goal for all new building projects, other than acute-care facilities, to outperform the required provisions of the California Energy Code (Title 24) energy-efficiency standards by at least 20 percent. Standards for energy efficiency for acute care facilities will be developed in consultation with campuses and medical centers.
- b. The University of California will design and build all new buildings, except for laboratory and acute care facilities, to a minimum standard equivalent to a *LEED*™ 2.1 "Certified" rating.
- c. Campuses will strive to achieve a standard equivalent to a *LEED*™ "Silver" rating or higher, whenever possible within the constraints of program needs and standard budget parameters.
- d. Given the importance of specifically addressing sustainability in laboratory facilities, the University of California will design and build all new laboratory buildings to a minimum standard equivalent to a *LEED*™ 2.1 "Certified" rating and the *Laboratories for the 21st Century (Labs21) Environmental Performance Criteria* (EPC), as appropriate. The design process will include attention to energy efficiency for systems not addressed by the California Energy Code (Title 24).
- e. Any proposed exception from the above standards may be requested administratively during preparation of the PPG. Any exception proposed after approval of the PPG will be treated as a scope change and processed in accordance with standard University procedures.
- f. Further study will be conducted before a similar sustainable design policy for new acute-care facilities is adopted.
- g. Any significant renovation projects involving existing buildings will also apply sustainability principles to the systems, components and portions of the building being renovated.
- h. In consultation with the campuses, the Office of the President will develop an internal evaluation and certification standard based on the *LEED*™ and *Labs21* measures.
- i. Campuses may choose to pursue external certification through the *LEED*™ process, augmented with *Labs21* criteria as appropriate for laboratory systems, in lieu of the internal process for a given project.
- j. The measures required by this policy will be incorporated into all new building projects, other than acute care facilities, submitted for first formal scope and budget approval as of July 1, 2004
- k. To the extent feasible within approved funding, campuses are encouraged to apply sustainability principles to all projects currently in design.
- l. The University planning and design process will include explicit consideration of lifecycle cost along with other factors in the project planning and design process,

recognizing the importance of long-term operations and maintenance in the performance of University facilities.

- m. For existing buildings, the University will explore the development of a standard methodology for sustainable policies and standards for facilities management, including assessing the *LEED*™ Existing Building (*LEED*™ *EB*) evaluation tool being developed for this purpose. These policies and standards will address aspects of building cleaning, maintenance, and operation to include factors such as chemical usage, indoor air quality, utilities, and recycling programs.
- n. The University will work closely with the U.S. Green Building Council, Labs21, the Department of Energy, the U.S. Environmental Protection Agency, State government, and other organizations to facilitate the improvement of evaluation methodologies to better address University requirements. Additionally, the University will work with the U.S. Green Building Council to develop a self-certification tool for University use.
- o. The University will use its purchasing power to promote the availability of products that are resource-efficient, energy-efficient, water-efficient, and of recycled and rapidly renewable content for building materials, subsystems, components, equipment, and supplies.
- p. The University will work with regulatory agencies and other entities to speed the development, approval, and implementation of products and technologies that improve energy efficiency and support sustainable design, construction, and operating practices.
- q. The University will develop a program for sharing of best practices.
- r. The University will incorporate the Green Building Design policy into existing facilities-related training programs, with the aim of promoting and maintaining the goals of the policy.

II. Clean Energy Standard

- a. The University will implement a systemwide portfolio approach to reduce consumption of non-renewable energy. The portfolio will include a combination of energy efficiency projects, the incorporation of local renewable power measures for existing and new facilities, green power purchases from the electrical grid, and other energy measures with equivalent demonstrable effect on the environment and reduction in fossil fuel usage. The appropriate mix of measures to be adopted within the portfolio will be determined by each campus. Since each campus's capacity to adopt these measures is driven by technological and economic factors, the campus will need to reevaluate their energy measures mix on a regular basis. The portfolio approach will provide valuable analytical information for improving energy efficiency, resulting in an overall improvement in the University's impact on the environment and reduced reliance on fossil fuels during the next decade of capital program growth.
- b. The University will strive to achieve a level of grid-provided electricity purchases from renewable sources that will be similar to the State's Renewable Portfolio Standard, which sets a goal of procuring 20 percent of its electricity needs from renewable sources by 2017. The University will initiate progress towards this objective in 2004 by purchasing 10 percent of grid-supplied electricity from renewable sources, subject to funding availability, and will track progress annually toward achievement of the year 2017 goal.
- c. With a goal of providing up to 10 megawatts of local renewable power by 2014, the University will develop a strategic plan for siting renewable power projects in existing and new facilities. The plan will include demonstration projects for photovoltaic systems and other renewable energy systems, such as landfill gas fueled electricity generation or thermal energy production. The strategic plan will include criteria for evaluating the feasibility of a variety of projects, such as incorporating photovoltaic systems in replacement roofing projects and in new buildings, as well as forecasting

the accommodations necessary for eventual installation of photovoltaic systems. The University will assess the progress of renewable energy technology improvements, both in terms of cost and technical efficiency. To achieve the renewable power goal, the University will maximize the use of available subsidies and negotiate pricing reductions in the marketplace, and will develop funding sources for financing the costs of renewable energy measures.

- d. With a goal of reducing systemwide non-renewable energy consumption, the University will develop a strategic plan for implementing energy efficiency projects for existing buildings and infrastructure to include operational changes and the integration of best practices. The plan will identify opportunities to incorporate energy retrofit projects into major building renovations as funding is available, and to initiate standalone retrofit projects as justified by future energy savings. The University will monitor industry progress in energy retrofits and implement technical improvements as they become available. As with renewable energy projects, the University will develop funding sources and establish a program for financing retrofit projects. The initial goal for energy efficiency retrofit projects will be to reduce systemwide growth-adjusted energy consumption by 10 percent or more by 2014 from the year 2000 base consumption level. The University will strive to achieve even greater savings as additional potential is identified and funding becomes available.
- e. The University will continuously evaluate the feasibility of other energy-saving measures with equivalent demonstrable effect on the environment and reduction in fossil fuel usage. In particular, campuses will evaluate transportation services, including fleet vehicles, Transportation Demand Management (TDM) programs, public transit, and on-campus housing goals.
- f. The University will develop a variety of funding sources and financing alternatives for energy efficiency, renewable energy, and clean energy projects that will enable campuses to be flexible in addressing their energy needs.
- g. The University will pursue marketing of emissions credits as a means to bridge the cost-feasibility gap for green power projects.

III. Authority and Report Schedule

The Regents have delegated authority to the President for promulgating policy regarding capital projects and existing University facilities. The President has delegated authority to the Senior Vice President -- Business and Finance for further definition of measures to implement University policy regarding sustainability. Chancellors are responsible for implementation in the context of individual building projects and facilities operations.

On an annual basis, the President will provide a report to The Regents that details the impact of the University's sustainability efforts on the overall capital program and University operating costs. The University's sustainability guidelines will be subject to continuous review. The guidelines will be reexamined every three years, with the intent of developing and strengthening implementation provisions and assessing the influence of the guidelines on facilities capital and operating costs. The University will provide the means for the ongoing active participation of students, faculty, administrators, and external representatives in further development and implementation of this policy.

LA SIERRA ENVIRONMENTAL AWARENESS CAMPAIGN

This is the second year of the campaign, where all the academic departments are judged by a team of six judges from the community over 3 months (Jan-April). Awards are presented at a campus wide earth day celebration assembly to the best three departments.

Go-Biking

LSU Recently an ad hoc committee has been formed at LSU to look at encouraging students to walk or bike to school. This committee will begin looking at ways to encourage greater

participation of students in walking and biking to campus rather than driving. LSU is also participating in a "safe routes to school" project conducted by the parks and recreation department. We are also working on conducting a survey in spring of 2006 among students to get input and provide assistance where needed to encourage student involvement in the program.

Recycling Project

About a year ago LSU, in a modest way began an effort to promote recycling on campus. There is a lot more to be done and there are plans being made to apply for a grant to help setup a more organized sustainable recycling program. Currently we have a few recycle bins at various academic building that are provided by Keep Riverside Clean and Beautiful. The Beta Beta Beta club and some departmental personnel are on an interim basis keeping the program going.

Campus cleanup

The Beta Beta Beta (Biological Honors Society) has been participating in quarterly events since their formation three years ago. Members of the club have gone around campus cleaning up any trash found on campus. We see a dramatic reduction of trash lying around campus.

Earth Day Celebration

Last year was the first time we celebrated Earth day April 22 at LSU, we are making every effort to involve all students, faculty and staff on having more environmental involvement on campus. Better late than never!!!

New Building Standards

According to the Vice President for Financial Administration at La Sierra University the University is making every effort to include energy efficient features in all new and renovated buildings on campus.

Environmental Club

There are plans to initiate an Environmental Club on campus in the 2006-07 school year
Electric Vehicles In the last 3 to 5 years the university has made a conscious effort to purchase electric vehicles. Currently there are 7 registered and 9 unregistered electric vehicles on campus. These vehicles are used by the physical plant, security, custodial, student life, enrollment, IT and administration.

Mulch /Water saving Irrigation system

The LSU physical plant department has been using all tree and plant trimmings to provide mulch for landscaping on campus.

Ride Share/ AQMD

LSU has been actively promoting Ride Share and has received several awards given by the Riverside County Commission in since the late 1980's for being an Air Quality Management District. The LSU security department spearheads the rideshare program and they do an annual survey of all 800 employees to determine distance traveled and mode of transportation. Ride sharing is encouraged by a monthly luncheon and bonuses.

Environmental Courses offered at LSU:

BIOL 415- Environmental Science (Biology Majors)

BIOL 396- Environmental Conservation(Adult Degree Program)

UNST 101- Freshman Orientation: An Eco-friendly Campus (University Studies-Freshman)

NSCI 404- Humans and the Environment

"Since sustainability is a cultural process, it depends on the everyday actions of ordinary people....Bringing sustainability home is about growing a culture of sustainability that is suited to the particularities of place."

Sym Van Der Ryn and Stuart Cowan, Ecological Design

PUBLIC POLICIES FOR A SUSTAINABLE RIVERSIDE

A deep rooted commitment to becoming a Clean and Green city requires policies and programs that create the basis for a sustainable future and the ability of the community to easily, affordably and intelligently pursue sustainable development. A formal statement of intent that commits the City to sustainability and outlines the broad scope of interests is necessary to lay the policy foundation for policies and programs to follow.

Sustainability in the civic context means maximizing energy efficiency; optimizing resource use while minimizing negative environmental impacts; minimizing waste production and pollution; capturing the benefits of natural processes while minimizing damage from natural events and meeting the economic and social needs of all its people in a manner that does not degrade or destroy the productivity of its natural and man-made systems.

The broadest implementation should be a general statement of intent leading to a Sustainable Element of the General Plan, followed by a process of review and revision of policy/regulations/standards/guidelines to ensure that sustainable development can proceed uninhibited by contradictory regulatory constraints.

The current national sustainability movement dates from the late '80s to early '90s, the time period that roughly parallels the "Smart Growth" movement in community design. The two movements are simply different sides of the same environmental quality coin. Smart growth addresses the quality of community in terms of functional, aesthetic and social qualities with direct links to environmental quality in open space development, urban containment and alternative modes of transport/transit. Sustainability focuses on environmental quality in terms of energy efficiency, water conservation, use of renewable materials, increased densities to reduce the demand for raw land, optimizing indoor air quality with direct links to smart growth in walkable communities, alternative modes of transportation, mixed use developments, densification and an emphasis on infill, brownfield and redevelopment.

Fifteen years ago the principles of the new urbanism profoundly influenced the theory and practice of community design, today the tenets of sustainability are having the same impact on how we minimize the environmental impact of community on the natural environment and with what environmental qualities and operational efficiencies we design and operate the infrastructure of community. Sustainability is clearly the "next big thing" in community development and may finally replace impact mitigation fees with environmentally based building that mitigates through design, minimizing and even avoiding entirely negative impacts. Sustainability is a deep societal trend, not a passing fad

Initiatives abound across the country, Chicago for example, has adopted its Environmental Action Agenda and is well on its way toward becoming one of the nation's most sustainable cities. Seattle, Portland, Austin, Chattanooga, Santa Monica, Tucson, Minneapolis and Boulder are each committed to a sustainable future and have adopted action programs to reach their sustainability goals. Some communities approach the sustainable issue incrementally with landscaping, energy efficiency and water conservation programs. Others extend the sustainable issue into an overall quality of life framework in which a number of measures (indicators) are assessed annually and become the basis for subsequent policy/program development and refinement.

The Clean and Green Task Force concluded Riverside is best served by an integrated set of policies, regulations and implementation programs, involving both the public and private sectors. While the recommended topics for inclusion range widely across the spectrum of sustainable issues, the list is far from exhaustive and leaves a great deal on the table for subsequent investigation and inclusion.

The task force members quickly and unanimously agreed upon the following charge:

"In order to make Riverside into an acknowledged "clean and green" city we must adopt the appropriate city policies and programs; develop and grant credits for the private sector; provide incentives for clean and green development; and ensure sustainable operations and maintenance of all public and private green facilities. Our mission is to define these ideals in detail so that each component becomes reality at the appropriate time."

DRAFT POLICY STATEMENT

SUSTAINABLE RIVERSIDE

"Take care of yourself.

Take care of each other.

Take care of this place."

Margaret Wheatly, The Paradox and Promise of Community

This simple but profound declaration of community responsibility ends with the fundamental purpose of sustainable action, taking care of this place, our City of Riverside. Yet sustainable thinking leads to a special kind of decision-making, i.e., a sustainability ethic in which choices are based on a commitment to bequeath our children a place better for our having served as steward of their environmental inheritance, clearly defined community conservation/preservation principles and a deep regard for the quality of the total environment, natural and man-made.

The values of legacy, conservation and respect are the foundation of a sustainable city. Just as the smart growth movement re-focused attention on the values of a humane and friendly urbanism, sustainability integrates environmental knowledge and ecological processes, the ethics of conservation, technological and design innovation, enlightened public policy and effective implementation programs.

The genuine benefits of measurable improvements in the quality of the man-made and natural environment are both obvious and too numerous to list herein. The issue of legacy, however, resonates deeply with a growing number of our citizens committed to contributing their efforts towards a greener, cleaner and more sustainable Riverside. Future generations have a claim on this generation to leave them a city at least as sustainable as currently positioned and hopefully, a good deal better. A sustainable Riverside is committed to a continual improvement in the quality of both the built and natural environment resulting in a legacy of genuine value.

The heart and core of almost every environmental effort revolves around the conservation of resources and their use in a manner that has zero impact on the environment or actually improves existing conditions. A sustainable Riverside embodies a civic conservation ethic that mandates conservation as a prime decision-making criteria in the design, development, operation and management of our man-made environment while preserving and protecting the natural environment out of which we carve our human habitat.

Lastly, a Sustainable Riverside demonstrates a deep regard for the value of the natural environment. While raw land will inevitably require conversion to human habitat, the manner in which that conversion takes place (development) and the qualities we impart to both the process and the built environment will make an enormous difference in the surrounding and included natural environment.

Creating a Sustainable Riverside requires the City recognize the following five general procedural goals:

- Provide and update useful and timely data to inform our residents about the resources available on living sustainably and keeping our city clean;
- Adopt General Plan policies that integrate land use, circulation, open space, energy use and conservation practices so that a Sustainable Riverside is the natural and inevitable consequence of the proper application of those policies;
- Ensure policy follow-through, adopt implementation plans, programs and regulations that facilitate sustainable development, maintenance and operations;
- The City also recognizes the need to lead by example and commits to developing pilot projects that demonstrate the benefits of proven sustainable action as well as those at the cutting edge.
- Particularly in the areas of clean air and traffic congestion, the city will work with regional agencies and adjacent cities and counties to design and implement regional programs to which Riverside contributes and receives benefits.

Regional Sustainability

Regional sustainability is wholly predicated on the region's constituent cities becoming sustainable themselves — no region with two-thirds of its residents living in cities can be sustainable without the cities full support and participation. A Sustainable Riverside responds to regional issues with innovative programs for land use (mixed use, high density residential, transit oriented development, etc.), circulation and transit, open space development, waste water treatment, storm water handling and energy generation/conservation. Particularly in the areas of clean water, clean air and traffic congestion, the city will work with regional agencies and adjacent cities and counties to design and implement regional programs to which Riverside contributes and receives benefits.

"Clean" Riverside

A "Clean Riverside" is a city with clean air, clean water, healthy indoor environments, displays pride in our civic landscape and recognizes the value in keeping our community clean and attractive.

- **Pollution:** Reduce air pollutants and water contaminants at the source, treat unavoidable emissions and provide remedies for previous pollutions.
- **Indoor Air Quality:** Ensure all citizens (especially our most susceptible—the elderly, infirm and young) are protected from chemical and environmental hazards.
- **Waste:** Reduce packaging waste at the source.

"Green" Riverside

A Green Riverside" is one that respects its natural and man-made environments by acknowledging the significance of what each generation inherits from its predecessors as a legacy on which to build. A Sustainable Riverside is dedicated to conserving natural resources, both as an ethical basis

for decision-making and as a strategic/tactical approach to development, maintenance and operation of civic and private enterprise.

- Water: Efficient use and re-use of water; conservation and on-site handling of storm water runoff; aquifer recharge and use of natural systems for grey water treatment.
- Energy: Increase site generated energy, reduce energy consumption and seek alternative energy sources based on renewable and natural energy cycles.
- Waste Treatment: Control and contain the consumption and waste treatment cycle.
- Resources: Encourage the use of low environmental impact materials, renewable resources, resources certified as sustainably grown, produced, harvested and manufactured and those with the lowest embedded energy content.
- Landscape: Utilize natural and native landscaping, conservation based irrigation systems and the use of landscape for passive temperature control in addition to contributing to Riverside's City of Trees reputation.

It is the policy of the City of Riverside to accelerate our ongoing civic efforts to become a Sustainable Riverside; to promote and support private enterprise in becoming more sustainable in commerce, industry and particularly in building and land development; to partner with local/regional institutions in sustainable development of regional infrastructure; to demonstrate leadership in sustainable development in all civic undertakings and to provide our citizenry with accurate, timely, economical and practical information on living more sustainably.

POLICIES AND PROGRAM RECOMMENDATIONS:

Policy Documents

General Plan Sustainability Element

Sustainability component to Specific Plans

Sustainability component to project specific Conditions of Approval

Appoint Sustainable Action Committee

Create The Office of Sustainable Action

In general, our recommendations are to: 1) endorse Sustainable Riverside as a vital and necessary civic goal; 2) commit the resources necessary to explore each of the key areas of interest; 3) assess our current capabilities and policy status; 4) develop new policies, guidelines and codes/regulations; 5) create implementation programs that ensure sustainable action and 6) monitor and measure progress toward a Sustainable Riverside.

General Plan Review:

Appoint a Sustainable Action Committee to review the draft Sustainable Riverside Policy; examine the General Plan for consistency with the adopted Sustainable Riverside Policy and recommend changes and additions to the GP to insure horizontal consistency and vertical integration and to initiate the process of defining programs and practices to implement the Sustainable Riverside Policy.

- Sustainable Neighborhoods Policies
- Transit Adaptive Community Policies

Upon completion of the General Plan issues, prepare draft language for inclusion in the Specific Plan Ordinance and the standard Conditions of Approval for development projects to implement the Sustainable Riverside Policy and the General Plan.

The policy review process will inevitably generate additional information and identify new topics that will augment currently defined concepts and expand the scope of sustainable issues to be investigated and, as appropriate, evolve into new policies and programs.

Sustainable Action Committee (SAC):

To keep abreast of emerging information and potential programs, appoint a Sustainable Action Committee staffed by the Office of Sustainable Action and reporting to the City Council. This committee will act as the citizen review function for all sustainable programs, investigations, special projects and will provide leadership for emerging task forces and working groups that will from time to time be created for specific focused investigations and program development.

Office of Sustainable Action:

Create the Office of Sustainable Action; appoint a Director to 1) oversee and coordinate the City's internal efforts at becoming more sustainable and 2) to advise and assist our citizens in achieving sustainability, particularly in assisting builders and developers in making their projects more sustainable.

COST/BENEFIT SUMMARY

Sustainable design, building and operations is perhaps the most rapidly expanding amalgam of policies, programs and practices dealing with the entirety of the environment that we have witnessed as a culture. Still a young movement, it is based on ancient wisdoms combined with state-of-the-art technologies and is generating deep interest from those interested in environmental quality as well as the long term benefits of economic performance and an improved quality of life.

As in all things the devil is in the details. While every project is unique, generalized benefits have been observed and measured, including first cost savings through streamlined permitting, reduced infrastructure costs, potentially dramatic savings in waste handling, substantial savings in mechanical equipment and where available, tax credits and other incentives.

Operating costs can be reduced in lower energy, water and resource consumption, increased life of mechanical and electrical systems, reduced maintenance costs, reduced daily waste generation. There is now evidence of increased commercial property values, increased sales and lease-up, reduced employee turnover and easier recruitment.

More than any other institution, the City benefits from life cycle analysis of costs and benefits, and when sustainable features, equipment, materials and systems prove cost effective, and increasingly they do, it is incumbent upon the city to both employ them in municipal projects and to promote their use by the general public.

One of the most meaningful benefit is in the health and productivity arena where overall health is improved (fewer employee sick days), enhanced comfort zones, increased productivity and learning, faster recovery after illness and in commercial retail applications, increased retail sales.

The overall community benefits from reduced demand for civic services, reduced waste handling and reduced automobile use and congestion/pollution. Environmental benefits are manifold, including reduced consumption of depletable resources, reduced resource extraction and processing impacts, reduced toxic emissions, reduced transportation costs and impacts, reduced urban heat islands and the preservation of natural wildlands and agricultural areas.

BACKUP MATERIAL

http://www.fs.fed.us/psw/topics/air_quality/
http://www.fs.fed.us/psw/topics/ecosystem_processes/
<http://www.fs.fed.us/psw/programs/cufr/>
<http://www.sustainable.org/index.html>

<http://urban.ucdavis.edu/sue.htm>
<http://www.chron.com/disp/story.mpl/front/3502420.html>
http://www.epa.gov/ttn/oarpg/t1/memoranda/evm_ievm_g.pdf

An article by Rosenzweig et al., titled Mitigating New York City's Heat Island With Urban Forestry, Living Roofs, and Light Surfaces," can be accessed directly at:
<http://ams.confex.com/ams/pdfpapers/103341.pdf>

The Local Government Environmental Assistance Network (LGEAN), in cooperation with American Forests, hosted a webcast in 2004 called "Seeing Green with Trees: The Economic and Environmental Benefits of Urban Forests." The webcast demonstrated how trees have been used by local governments to meet environmental regulatory requirements, save money, and improve community quality of life. A multimedia CD-ROM of the webcast and fact sheet is now available for free from LGEAN. To order a copy, contact LGEAN at 877. TO-LGEAN or by email at lgean@icma.org

Learn more of this topic at www.lgean.org/html/whatsnew.cfm?id=853



CLEAN AND GREEN TASK FORCE

REGULATORY DOCUMENTS AND PROGRAMS

Current regulatory and standards documents do not reflect sustainability as a design criteria and may in fact, conflict with sustainable practices as we currently understand them. A General Plan Sustainability Element should set forth planning and design principles upon which review and modification of statutes such as the Zoning Code or Citywide Design Guidelines could proceed.

Much more so than in typical development, sustainable planning and design is highly site sensitive and context responsive. It is worth noting that as in all newly emerging disciplines, more innovation, not less, is required to define the acceptable bounds of the solutions proposed. Therefore, as policies, regulations, practices and programs are reviewed and alternatives offered, a wide-ranging and comprehensive investigation should be the norm. Specifically we recommend review of Public Works policies and construction standards and the adopted building codes with the purpose of removing barriers and conflicts between existing standards and sustainable practices.

Zoning Code review and revisions for sustainable development

There are four components to the Zoning Ordinance that bear review:

- 1 Policy and procedural codes like the PRD that are overlay applications.
- 2 General planning and design standards such as parking, landscaping, open space design, etc.
- 3 Community/neighborhood/project level planning and design regulations (density, height in stories, street setbacks, edge conditions,
- 4 Individual building and lot regulations (height, coverage, setbacks, separations between buildings, etc.)

Building Codes

The Uniform Building Code and its proposed replacement, the International Building Code establish specific and precise standards for building construction and are based on life safety issues. While there are likely few conflicts with sustainable practices, it is nonetheless important to review the codes for inconsistencies that might prohibit the utilization of green building technologies, systems and materials.

Citywide Design Guidelines review/revision for sustainable design

The design guidelines are a controversial approach to quality of development, even more so when sustainability issues are factored in. Building orientations, passive shading devices, landscape as part of a passive cooling approach, landscape materials, irrigation approaches, open space design, etc. all need the flexibility to respond to site specific conditions, a flexibility not currently addressed by the guidelines.

Public Works Standards review/revision for sustainable development

Public projects typically impose rigorous design and bidding requirements. As necessary, a new policy should be drafted that permits low bid to be exceeded by a specified percentage to achieve sustainability goals as bid additions. Standards such as street widths, paving specifications, landscape material requirements, irrigation systems and landscape maintenance practices need review and modification.

Fire Code/standards review/revision for sustainable development

Specifically review street widths and paving options

Adopt Parks and Recreation sustainability standards for parks, recreation and open space facilities

Parks and recreation facilities are specially well suited to the utilization of sustainable methods, materials such as turf zones limited to active field play areas, natural and xeriscape landscape material, full canopy parking areas, subterranean irrigation systems, buildings and facilities, open space design for storm water treatment and use, bio-filtration swales and designed wetlands and grey water treatment for irrigation use.

Vigorous enforcement of "clean" ordinances and sustainable landscape maintenance practices:

Clean ordinances: Clean and green link together when the collection and treatment of waste products produces both aesthetic benefits and potential "raw material" for sustainable enterprise. Green waste recycling and weed abatement not only clean up the neighborhood but can contribute fodder for composting and pelletization; enforcement of litter and illegal dumping ordinances in conjunction with a sustainable solid waste recycling system keeps the city clean and sanitary while providing material for post-consumer industries to recycle, treat and re-assemble waste products.

Sustainable landscape maintenance: The utilization of sustainable landscape maintenance practices not only yields clean green waste but enhances the health of the plants and contributes to the creation of a GreenPrint canopy that reduces the heat island effect and keeps the landscape looking "natural" all year. In particular, "hat-racking" of trees, especially in parking lots, produces weaker limb structures, eliminates shading benefits and increases the green waste load.

POLICY/PROGRAM RECOMMENDATIONS

As a general policy, sustainable standards and guidelines should supercede the traditional regulations wherever conflicts occur. It is inevitable some conflicts will remain in the various documents discussed below and this policy statement will serve to resolve any controversy about which should govern.

Zoning Ordinance

Review the entire Zoning Code in terms of the four components, identifying conflicts with sustainable planning/design principles. Draft alternative language for conflicting requirements and evaluate for horizontal consistency across the range of regulated issues.

Prepare a Sustainable PRD set of standards or an addition to the PRD ordinance for sustainable projects. As appropriate, use LEEDs and Green Building criteria and/or use such criteria by reference to a "to be adopted" program. This is the area in which consistency is critical to avoid a sustainable project that meets LEEDs or Green Builder criteria failing to meet zoning regulations that prohibit the very solutions that make the project sustainable.

Building Codes

The Uniform Building Code and its proposed replacement, the International Building Code should be reviewed for requirements and standards that are potentially in conflict with sustainability objectives and practices and where so identified, language crafted to resolve the conflicts.

Citywide Design Guidelines

Prepare alternative Sustainable Design Guidelines or better yet, include them in the Citywide Design Guideline book.

Public Works Standards

Prepare alternative Public Works Construction Standards and include them in the Standard Drawings for Construction. Prepare and adopt specifications for sustainable materials, systems and assemblies and revise bidding and contracting procedures to permit their utilization.

Fire Code Standards

Review the Fire Code and prepare alternative sustainable standards where applicable in conformance with the intent and technical engineering requirements of the Fire Code.

Parks and Recreation

Review the current design and construction standards for sustainability, prepare alternative language where appropriate and adopt the same bidding and contracting procedures as mentioned above.

Code Enforcement

Rigorously enforce all "clean" ordinances and require city enforced clean-ups to follow recycling practices. In such instances, the City should consider providing suitable recycling containers of the appropriate size and bill the responsible party for removal and handling.

CLEAN AND GREEN TASK FORCE

INCENTIVE PROGRAMS

Sustainability is a qualitative issue, not a cheaper solution than traditional practices and as such requires incentives to push the issue in the marketplace. Sustainability is about doing things right, about reaching for excellence rather than settling for the status quo. Incentives are necessary for the simple reason that many beneficial sustainable products and practices are insufficiently available or utilized to have passed the profitability threshold or they are still so new that the trades have yet to build up a competitive labor pool of skilled workmen and qualified installers.

Incentives, which require a real financial component, need to be administered so that their use by the recipient yields genuine public benefit with a clear nexus to public policy. The basic rationale of incentives is that the personal or corporate use of sustainable goods and services also benefits the larger community by expanding the breadth and depth of sustainable programs. For example, the use of photo voltaic panels to generate electrical power for a home also reduces the need for additional generating capacity, increases disposable income and sales tax revenues by reducing utility costs and acts as example for others to involve themselves in the program

Infill Development

Green Building Programs

Funding for sustainable programs

Green Rate utility structure

POLICY AND PROGRAM RECOMMENDATIONS

Amend the Infill Development Program to include multi-family projects at higher densities

Adopt the California Green Builder program for residential construction
Adopt LEED standards for municipal buildings

Identify all applicable funding opportunities and provide user friendly access and links.

Apply for all applicable loans and grants available to the city and other non-profit groups

Adopt "green rates" for homes and businesses that meet specified criteria for efficiency, resource conservation and green living practices.

FUNDING OPPORTUNITIES AND ORGANIZATIONS

RIVERSIDE PUBLIC UTILITIES PROGRAMS AND SERVICES

<http://www.riversideca.gov/utilities/benefits/resi.htm>

<http://www.riversideca.gov/utilities/benefits/biz.html>

<http://www.riversideca.gov/utilities/benefits/comm.htm>

<http://www.riversideca.gov/utilities/bepowerwise/>

<http://www.riversideca.gov/utilities/bewaterwise/>

SMART COMMUNITIES, FUNDING OPPORTUNITIES

www.smartcommunities.ncat.org/management/financl.shtml

CALIFORNIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

<http://housing.hcd.ca.gov/fa/>

<http://housing.hcd.ca.gov/clearinghouse/>

CALIFORNIA ENERGY COMMISSION

<http://www.consumerenergycenter.org/erprebate/program.html>

CALIFORNIA DEPT OF WATER RESOURCES

<http://www.grantsloans.water.ca.gov/choose/index.cfm>

DIVISION OF THE STATE ARCHITECT

<http://www.dsa.dgs.ca.gov/Sustainability/energy.html#utility-specific>

Riverside Public Utilities:

The following programs are for all commercial customers of Riverside Public Utilities. There is on-going funding for this program with no deadline for application.

<http://www.ci.riverside.ca.us/utilities/benefits/biz.htm>

HVAC: \$35 - \$120 for replacement or installation of central air conditioning units with high efficiency equipment.

Lighting: \$0.05 per kWh saved

Energy Management Systems Assistance: \$20,000 for technology purchases that can provide energy savings and promote energy efficiency and conservation.

Cooling Equipment & Variable Speed Frequency Motor Drives: Incentives range from 8 cents to 16.5 cents per kWh saved from original equipment.

Outdoor Security Lighting: \$10 to \$35 per fixture

Refrigerator Purchase and Recycling: Rebates of \$100 per unit are paid on qualified ENERGY STAR® rated refrigerators and customers can recycle older inefficient refrigerators and freezers. Rebates of \$25 are available for each operating unit.

Motors: \$35 to \$630 for replacing older inefficient motors with the most energy efficient motors available.

Thermal Energy Storage: \$200 per on-peak kilowatt saved.

Custom Energy-Efficient Technology Grant Program: Up to 100% of the project cost with a maximum of \$100,000 per project for research, development, and effective use of innovative energy technologies.

Energy Star: \$25-\$200 rebates for purchase of Energy Star Equipment

GREEN AFFORDABLE HOUSING COALITION

<http://www.frontierassoc.net/greenaffordablehousing/Financing/Loans.shtml>

FUNDERS NETWORK FOR SMART GROWTH AND LIVEABLE COMMUNITIES

http://www.fundersnetwork.org/info-url_nocat2777/info-url_nocat.htm

CLEAN AND GREEN TASK FORCE

PILOT PROJECTS AND TEST PLATFORMS

The public interest is well served by sponsoring and participating in sustainable development cutting-edge projects by illustrating the viability of conservation technology and its environmental and economic benefits. Riverside may well qualify for additional funding by pursuing such projects and coordinating with state and federal agency programs and working with local/regional public utilities transportation and water agencies. Pilot programs should be developed where people gather naturally (shopping centers, theaters, schools, City Hall, Parks and the Main Street Mall) so that our citizens are exposed to sustainable ideas in their natural path of travel.

At the minimum the City should take a passive role in supporting and facilitating experimental and pilot projects and in appropriate circumstances the City should actively participate in projects exploring land use and technological breakthroughs. Passive support could take the form of equity investment, land contributions, streamlined processing, facilitating variances and exceptions necessary to implement the project. etc. Active participation could directly fund construction, sponsor planning and design efforts, nominate selected public works projects as "pilot projects" to receive special consideration in processing, funding and incorporation of emerging technologies and design features.

Public Works examples: Public utility developments and installations, parks and recreation facilities, signature buildings in historic districts, landmark structures, civic buildings, etc.

Private examples: Common facilities in residential and mixed use developments; signature structures in commercial and industrial developments; selected components, features and amenities in projects willing to accept the monitoring and operational costs.

POLICY/PROGRAM RECOMMENDATIONS

Authorize the responsible department heads through the City Manager to pursue "pilot projects" under prescribed circumstances, following established protocols to develop, build and operate these unique projects.

CLEAN AND GREEN TASK FORCE

URBAN LANDSCAPE: CITY OF TREES

The urban landscape is one of the most apparent blendings of "clean and green", creating an attractive and "soft edged" urbanscape while contributing very important environmental benefits. The visual benefit of trees and green space in the hardscape of urban habitat is easily perceived and enjoyed. The environmental benefits are more subtle, hidden and less well understood.

Trees, for example, provide shade to reduce the heat island effect, generate oxygen and consume carbon dioxide, reduce air pollution, offer protection from the summer sun, soften the urban skyline, create an oasis of natural ecology in the midst of city life and bring the natural world a bit closer to urban residents.

Green Print Program:

The City and County of Sacramento have implemented a Green Print policy for their areas that promotes and uses tree canopy (the total area of the spread of a tree) to help mitigate the effects of heat islands and green house gases and particulates on air quality. We all know that the trees in our communities are performing valuable environmental functions everyday. A well-treed city can expect its urban forest to improve air quality by trapping particulate matter and filtering harmful pollutants. Recognizing this, the Environmental Protection Agency has recently made provisions for urban trees to be included in State Implementation Plans to improve air quality. The USDA Forest Service and other partners have recently developed a new website for "Building the Case for Urban Tree Canopy Inclusion in State Implementation Plans".

For more information, visit: <http://www.treescleanair.org/index.htm>

Sources

<http://www.sactree.com/aboutUs/programsServices/greenprint/greenprintOverview.html>

http://www.fs.fed.us/psw/topics/air_quality/

<http://www.fs.fed.us/psw/programs/cufr/>

http://www.nasa.gov/vision/earth/environment/nyc_heatisland.html

<http://www.chron.com/disp/story.mpl/front/3502420.html>

http://www.epa.gov/ttn/oarpg/t1/memoranda/evm_ievm_g.pdf

A paper by Rosenzweig et al., "Mitigating New York City's Heat Island With Urban Forestry, Living Roofs, And Light Surfaces," associated with this NASA study and presented at the American Meteorological Society meeting mentioned in the Press Release can be accessed directly at:

<http://ams.confex.com/ams/pdfpapers/103341.pdf>

An earlier paper, by Rosenzweig and Solecki, "Climate Change and A Global City: Learning from New York," appeared in the magazine Environment, in April, 2001, and can be accessed directly at:

<http://www.earthscape.org/p1/sow01/sow01.pdf>

POLICY/PROGRAM RECOMMENDATIONS

Riverside adopt and implement a green print program for the city together with adjoining communities

Sustainable Landscape

To demonstrate to the community that the City of Riverside is a sustainable community that promotes an ecosystem approach to management of its parks, open space, reverse frontage and median landscapes by minimizing waste production. Urban Landscapes by nature generate green waste from mowing lawns, trimming shrubs and pruning trees. Waste from this work can be minimized by choosing the right plant for the right place. Use dwarf lawn seed selections and select tree and shrub species that when mature do not grow larger than the available space.

Shrubs should not be hedge trimmed, but rather pruned. Hedge pruning causes hundreds of cuts on each plant and the plant responds with hundreds of new growth shoots that require continual pruning. Shrubs that are pruned, where the pruning is cut to a side branch so that the energy goes into that branch, will minimize the need for continual pruning and thus minimize waste.

Trees should not be pruned excessively. No more than 20 % of the canopy should be removed at any one time. Excessive pruning causes excessive re-growth, the need for additional pruning, and generation of green waste.

In general, water and fertilize landscapes to keep plants healthy. Excessive pruning, watering, fertilizing or a combination of any or all promotes unnecessary green waste.

As we look towards a sustainable community, there is a desire to minimize energy, natural and manpower resources, and water. By choosing the right plant/tree for the right place, we can accomplish this goal. There are two facets to this policy. The first one is to select plant material that is appropriate for our inland climate. For example, choose Mediterranean climate plants and those native plants that will grow in Riverside and that require less water to grow.

The second facet is to look at selecting plants that fit the space that is available. This will minimize the need for trimming and potential damage to the infrastructure. For example, if there is a three foot parkway available for planting a tree, use a species that is appropriate for a three foot parkway and not one that needs a six or eight foot parkway within which to grow.

POLICY/PROGRAM RECOMMENDATIONS

Adopt as part of its Sustainability program, a Sustainable Landscape element and that the appropriate work programs be implemented

Develop and use a plant palette of species that will grow in Riverside's climate without the need for excessive water and that the selection of plants for individual projects be based on a site analysis that looks at available space above the ground, at the surface and below the ground.

Sources

<https://www.washington.edu/change/proposals/scl.html>

<http://eesc.orst.edu/agcomwebfile/edmat/html/ec/ec1533/ec1533.html>

http://www.fs.fed.us/psw/topics/ecosystem_processes/

<http://urban.ucdavis.edu/sue.htm>

Waterwise Landscape

There is a limited supply of water and as our city and area expands the demand for water increases. Landscaping is a large user of water. All public landscapes should be able to demonstrate that they require an overall average amount of irrigation water not to exceed 3 acre feet of water per year. Landscaping should be balanced between the use of turf grass, low water usage trees and shrubs and natural riparian landscaping. Shrub and tree areas should be designed separate from turf grass with their own irrigation systems. A thick layer of mulch (approximately 6 inches) should be maintained in these areas to conserve water.

POLICY/PROGRAM RECOMMENDATIONS

That Landscaping standards be developed to meet acceptable Water Wise Landscaping criteria.

That the City of Riverside adopt a policy that all new public landscapes and all renovated public landscapes meet established water wise standards.

Sources

<http://www.dola.state.co.us/smartgrowth/documents/Water%20Efficient%20Landscaping%20Design.pdf#search='waterwise%20landscaping'>
<http://home.earthlink.net/~waterplanning/>

Sustainable Irrigation

All public landscapes should be able to demonstrate that the irrigation system is efficient. Spacing of heads, drippers etc should allow for equal distribution of irrigation water over the area. Irrigation clocks should be programmed to allow for percolation of irrigation water without runoff. Irrigation schedules should be tied to CIMIS and plant needs.

POLICY/PROGRAM RECOMMENDATIONS

Adopt a policy that states that all new public irrigations systems be water efficient. That the City begin a Capital Improvement Program to retrofit existing irrigation systems to state of the art water efficient systems that are tied to CIMIS.

Sources

<http://www.cimis.water.ca.gov/cimis/welcome.jsp>
http://grounds-mag.com/mag/grounds_maintenance_last_drop/index.html
<http://www.nrcs.usda.gov/feature/backyard/watercon.html>

Structural Soils

To resolve the inherent conflict between paving and tree roots. Cornell University has developed a soil structure that can be compacted to meet paving requirements and still provide space for tree roots. The use of this soil will reduce long term maintenance costs of roadways. It has also been shown that the useful life of asphalt streets is extended when the paved surface is shaded by trees. There is a win-win using structured soils in reducing long term street maintenance costs.

POLICY/PROGRAM RECOMMENDATIONS

Adopt a policy that will require the use of a structured soil such as the one developed by Cornell University for the construction of all public roads and highways in order to promote good tree growth and mitigate air pollution.

Sources

<http://www.betterroads.com/articles/nov04e.htm>
http://cufr.ucdavis.edu/products/cufr_372_TreeRootConflicts.pdf
<http://www.urbanforestrysouth.org/Resources/Links/Link.2005-05-02.1324>
http://www.lid-stormwater.net/permeable_pavers/permpavers_benefits.htm

An article reviewing the use of asphalt rubber, titled "Asphalt Rubber Makes a Quiet Comeback", can be accessed at:

<http://www.betterroads.com/articles/may04d.htm>

A research article titled "A Review of Tree Root Conflicts With Sidewalks, Curbs, And Roads", can be accessed at:

http://cufr.ucdavis.edu/products/cufr_372_TreeRootConflicts.pdf

A handy document from the American Society for Landscape Architects, titled "Structural Soils: A New Medium to Allow Urban Trees to Grow in Pavement", is accessible from:

<http://www.urbanforestrysouth.org/Resources/Links/Link.2005-05-02.1324> A review of the use of structural soils by the Cornell Urban Horticulture Institute, titled "Structural Soil: An Innovative Medium Under Pavement that Improves Street Tree Vigor," can be accessed at:
<http://www.hort.cornell.edu/uhi/outreach/csc/article.html>

A decent review of the use of structural soils, titled "Structural Soils for Urban Applications", is at:

http://dallas.tamu.edu/soils/Current_Projects/Structural_Soils/structural_soils.htm
Structural Soils Policy Continued

Research: Street Trees Slash Road Costs

<http://www.fs.fed.us/psw/programs/cufr/products/cufr639mcpherson-JOA-pavingsshade.pdf>

Cornell University - Structural Soil Bulletin free on the web: A 17-page bulletin, "Using CU-Structural Soil in the Urban Environment," is now available free at
www.hort.cornell.edu/UHI

Trees and Sidewalks

A large cost is associated with trees and sidewalk damage. If the City continues to remove trees to repair sidewalks or to install new sidewalks, there will be a significant decrease in the number of trees and the size of the canopy of those trees. This decrease will negatively impact the air quality and the quality of life in Riverside. A policy should be explored that allows for maximum tree canopy and still provides for safe passage on sidewalks.

All new developments should provide for parkways with a minimum of six feet of planting width before the sidewalks. The practice of curbside sidewalks should be discontinued. New sidewalks in existing areas should be placed so as to have minimal impact on trees. Good arboricultural practices should be used in both the placement and installation of new sidewalks. Sidewalks should be placed on only one side of the street in residential neighborhoods to minimize this impact. Where possible, sidewalks should be placed on the street side of the curb, thus narrowing the street and if necessary mandate no parking on that side of the street. This will provide the least amount of negative impact on existing trees.

Sidewalk repairs should take into account tree roots and potential damage to them. Where appropriate, non-concrete repairs should be made such as the use of rubber sidewalks and/or compacted decomposed granite.

POLICY/PROGRAM RECOMMENDATIONS

That the City of Riverside adopt a sidewalk policy that will place a priority on the protection of trees and the enhancement of the urban forest by: creating guidelines in new developments that require a minimum of a six foot parkway for trees; that new sidewalks in existing neighborhoods be placed so as to have a minimum impact on existing trees either by placing the sidewalk on the street side of curbs, meandering the walk around trees, narrowing the walk where necessary, and or acquiring more right of way so as not to damage tree roots or necessitate the removal of trees; and that sidewalk repairs should make every attempt not to necessitate tree removal or extensive damage to tree roots by meandering the repair away from the tree, or by using rubber walks or decomposed granite.

Sources

http://cufr.ucdavis.edu/products/cufr_372_TreeRootConflicts.pdf

<http://www.urbanforestrysouth.org/Resources/Links/Link.2005-05-02.1324>

http://www.lid-stormwater.net/permeable_pavers/permpavers_benefits.htm

An article reviewing the use of asphalt rubber, titled "Asphalt Rubber Makes a Quiet Comeback", can be accessed at:

<http://www.betterroads.com/articles/may04d.htm>

A research article titled "A Review of Tree Root Conflicts With Sidewalks, Curbs, And Roads", can be accessed at:

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A handy document from the American Society for Landscape Architects, titled "Structural Soils: A New Medium to Allow Urban Trees to Grow in Pavement", is accessible from:

<http://www.urbanforestrysouth.org/Resources/Links/Link.2005-05-02.1324>A review of the use of structural soils by the Cornell Urban Horticulture Institute, titled "Structural Soil: An Innovative Medium Under Pavement that Improves Street Tree Vigor," can be accessed at:
<http://www.hort.cornell.edu/uhi/outreach/csc/article.html>

www.rubbersidewalks.com
www.mindfully.org/Plastic/Rubber-Sidewalks.htm
www.ithaca.edu/icq/2005v1/cn/sidewalks.htm

Tree topping and hat-racking

Every year in the spring we witness topping of trees all over the city. There is a need to educate the public regarding the harm this does to trees. To reduce the topping of trees to secure a sustainable urban forest in Riverside. Topping or hat racking of trees as it is sometimes called, is the cutting off of the tops of trees and thus removing all of the foliage above these cuts. There are eight reasons why topping is harmful to trees:

- **Starvation** - If enough foliage is removed from a tree, it will starve and lose its vigor and can lead to death.
- **Shock** - Some species of trees can go into shock and not generate new growth.
- **Insects and Diseases** - Topping cuts are not able to heal. These wounds can attract insects and diseases leading to decline.
- **Weak Limbs** - The new growth that emerges is weakly attached and will eventually break off. Thus the hazard potential increases.
- **Rapid New Growth** - This rapid new growth is a softer wood than normal.
- **Tree Death** - Sometimes topping leads to the death of the tree.
- **Ugliness** -
- **Cost** - Trees that are topped in the long run cost more to maintain because topping mandates frequent pruning because of rapid weak new growth.

Attached is a list of cities, generated from a survey three years ago, that have adopted anti-tree topping language. Riverside has anti-tree topping language in its Urban Forest Policy for public trees. Private trees are the concern, especially in commercial projects where the city has mandated trees in the landscape.

State Legislature Government Code Section 53067, "Tree pruning, legislative declaration; specifications ..." addresses this issue and recommends proper and acceptable standards for tree trimming.

POLICY/PROGRAM RECOMMENDATIONS

That the City of Riverside adopt a policy as part of its property maintenance ordinance that prohibits the removal of all/most of the leaves and buds, removal of all/most of the foliage, and removal of large parts of the tree trunk of private trees to insure that the greatest benefit be derived from all trees within Riverside's Urban Forest.

CLEAN AND GREEN TASK FORCE

"It's not easy being green."
Kermit the Frog

EDUCATION AND PUBLIC AWARENESS

The result of our own education on clean and green issues leads us to conclude that Riverside is already a clean and green city, our recommendations will make it more so in perceivable ways with great community benefit. Yet even as we reached our conclusion, we found that our awareness (which is probably neither more nor less than the man-in-the-street's understanding of clean and green issues) of existing programs was woefully short of all that is available and in practice. We have identified the following general categories of residents who could be well served by a comprehensive program of public information, program coordination and project guidance:

- Residents seeking to live more sustainably and with a greater participation in keeping Riverside clean and beautiful.
- Students of any age seeking focused information on clean and green topics.
- Commercial enterprise seeking information on making their businesses more sustainable.
- Agencies, NGOs, private organizations and citizens seeking to partner with others in clean and green activities.
- Developers and builders (from large national builders to residential home decorators) seeking to build more sustainably.

In the context of education (we use "education to mean the delivery of usable and accurate information) we recommend the following kinds of information and data resources be made available to Riverside residents and those doing business here:

- Guidelines, practices and "how to's" for living cleaner and greener;
- Specific information on locally available programs for achieving sustainability in the home, business, school and industry;
- Funding sources that assist in sustainable living and commerce;
- Focused educational information on sustainability;
- Direct links to web based resources on sustainability and
- Riverside Clean and Green website

When an entire generation of our youth has grown up sustainably, living clean and green won't be heroic, extraordinary or unique; it will simply be the way things are done. At that point we will have achieved much of what we recommend. Getting us there is based in significant part on making "sustainable living" theory, programs and practices available to all residents, businesses and institutions. Specifically we foresee two critical and long-lasting benefits:

- An informed citizenry and electorate that practices sustainable living
- As a municipal utility provider, conservation and efficiency have direct and immediate benefits to anyone who purchases utility resources in the form of reduced energy and water costs and the expansion of available resources to a larger consumer base without the need to expand generation/treatment facilities.

POLICY/PROGRAM RECOMMENDATIONS

Establish a website: www.clean&greenriverside.org

- Link to city, RPU, KRCB, KAB, www.livinggreen.org, www.greenguide.com , www.inlandorange.com , schools, universities and colleges, etc.
- Educate public and enforce litter laws

Media Campaign

- Print media--Inland Empire Magazine, 951, Press, La Prensa, Black Voice News, Business Press, banners, brochures etc.
- Video media--cable TV, city channel, public access etc.
- Audio (radio) media outlets to publicize www.clean&greenriverside.org
- Publicize current accomplishments—Tree City USA, AIB Urban Forestry Award, Most Livable Community, All America City, etc (plus distinctions from other working groups)
- Work to expand increased ridership and use of green fuels and vehicles

Education:

- Adopt NEED programs in K-12
- Utilize current educational programs with Riverside Public Utilities
- Establish speakers bureau from committee, engage other environmental groups (VAF, UCCE MG) and Chamber of Commerce to publicize/utilize with a program CD
- Establish/publicize model water efficient landscaping garden spots throughout the community (Dr. Peter Lewis garden, Jess Carlos garden, etc)
- Work with local retailers, nurseries to educate/advocate water efficient landscaping
- Booths at community events to publicize clean & green through use of promotional items
- Inservice for city staff (appropriate department heads, supervisors, landscape maintenance supervisors, etc) on clean and green practices
- Provide content, resources and speakers for in-class and field instruction at local schools and colleges
- Sponsor design competition at Cal Poly Pomona School of Architecture, Planning and Landscape Architecture

Strategic Partnerships

- Colleges and Universities, RUSD and Alvord,
- UCR Environmental Research Institute, (Blakely Institute for Sustainable Suburban Development, CE-CERT, etc.)
- Build "natural" constituencies: Environmental organizations, builders and developers (ULI, NAHB, NAIOP, AGC), green material/system manufacturers, etc.
- Develop derivative constituencies that flow appropriately from the natural constituencies: affordable housing advocates, energy companies
- Utilize third party advocates: CEC, foundations (Hewlett, Packard, Irvine, etc.), Chambers of Commerce, educational institutions (UCR, Riverside Unified, and the Center for Sustainable Suburban Development, etc.)

Incentives:

- Offer incentives to developers who meet and exceed LEED standards
- Offer grants to residents, neighborhoods for remodeling to meet LEED standards and/or planting water efficient landscaping
- Establish a utility rate reduction for "green rate"

Recognition:

- Sticker/decal for window, yard sign for business/residents who are "clean & green"
- List on Honor Roll on www.clean&greenriverside.org, www.krcb.com , etc
- Press releases on a "Clean and Green Awards Program (in conjunction with the KRCB program?)

Resources for Sustainable Living

- Web Sites, Conferences, Leading City Programs, Bibliographies, Consultants, Universities and Institutes, Energy and Resource Groups
- How-to manual for sustainable:
 - Residential living,
 - Commerce and industry,
 - Government
 - Land development and green building

CLEAN AND GREEN TASK FORCE

REGIONAL SUSTAINABILITY

The manner in which topics are assigned to larger categories is a decision based on intent and for our purposes, regional sustainability focuses on those two critical issues over which the City of Riverside has little control yet is severely impacted in a negative way: Clean air and transportation. Their separate but related challenges cannot be solved locally: our most effective response seems to be participation in regional planning and regulatory bodies.

CLEAN AIR: Clean air has two components: overall environmental air pollution and indoor air quality. Indoor air quality is addressed principally in green builder programs in which contaminants, pollutants and toxins are reduced and/or eliminated by proper material specification, construction and the selection of effective HVAC and fresh air filtering technologies.

Outdoor air quality is largely a function of the prevailing wind patterns that deliver (by some estimates) 90% of our pollution from points west. Yet the city has adopted several local programs to reduce pollutant loads and continues to support alternative fuel use combined with expansion of local transit use.

TRANSPORTATION: Transportation issues are closely linked to regional clean air concerns and add congestion, land use policies and alternative fuels issues to the discussion. From a sustainable standpoint, increased use of transit would mean fewer cars on the roads, less congestion, less pollution and less land devoted to the automobile. Our dependence and devotion to the car will not diminish quickly, nor should we radically change our land use policies as a function of potentially temporary blips in use patterns due to historically high gas prices. What is appropriate is to begin to consider how increased transit use would affect traditional development patterns and conversely, how development regulations can be modified to make transit use more likely, convenient and financially self-sustaining.

CLEAN AIR: REPORT TO THE CITY COUNCIL

On November 19, 2002 Mayor Ronald Loveridge proposed strategic actions to make Riverside a Model Clean Air City. The stated goal of these actions was that Riverside should be a recognized leader in control strategies among cities in Southern California. Prior to adoption of the plan, two meetings were held by representatives from Public Works and Administrative Services for the City, the American Lung Association, CE-CERT from UCR, Clean Air Now, the Northwest Clean Cities Coalition(now the Western Riverside County Clean Cities Coalition), the Riverside County Transportation Commission, Riverside Land Conservancy, and the South Coast Air Quality Management District. The group presented eleven recommendations to the City Council.

Work was begun on the adopted recommendations prior to the committee's first meeting on October 27, 2003. It was determined that quarterly meetings were not necessary once the plan was adopted. The committee met twice in 2004, again in 2005, and in 2006.

Since the first meeting in October 2003 the following accomplishments have been achieved.

- A clean air program has been adopted.
- The committee worked with the Planning Department to assure that an air quality element was included in the General Plan.
- Each year the committee has reviewed the AB2766 funds received from vehicle registration. The funds have been used to support the following programs:
 - GoRiverside – a citizens' review of the local bus system with the goal of encouraging new ways to look at transit to attract a different rider population.
 - Clean Air Challenge – an educational program for junior and senior high school students. We have presented three workshops for 46 teachers in Riverside reaching approximately 5,000 students. A fourth workshop is scheduled for May 8, 2006.
 - City Rideshare programs.

- Clean Fuel Fleet Program – under the guidance of Fleet Manager, Martin Bowman, we continue to convert more vehicles to alternative fuels. Currently 38% of the fleet is alternative fuel vehicles (AFV). Riverside was one of five cities in the South Coast Air Basin to have a hydrogen fueling station. We now have five hydrogen hybrid internal combustion vehicles.
- Freeway signs for AFV – signage for alternative fuels for the public. Cal Trans should complete the signage by the end of April. City signs are already in place. A hydrogen logo is being added.
- Riverside received recognition by the South Coast Air Quality Management District at their Clean Air Awards in October 2004 in the category of Model Community Achievement.

The committee presently has fifteen members representing the original groups. The Riverside Transit Agency has joined the committee, and a representative from the Riverside Metropolitan Museum. The committee has determined that they only need to meet *(annually/biannually)* to review the program, monitor progress, and consider new action items. Future actions include:

- Adding photovoltaics to the fueling island in the Corporation Yard.
- Establishing an educational program for the public on the use of alternative fuel vehicles. This may include a mailer through public utilities, and having a passive kiosk off Lincoln Street for the alternative fuel station.
- Supporting the development of plug-in hybrid technology for vehicles.
- Revising the city's rideshare program.
- Supporting Go Riverside/UCR pilot program.

POLICY/PROGRAM RECOMMENDATIONS

Continue to work cooperatively with regional agencies to improve transportation systems and efficiencies and improve the quality of our air.

CLEAN AND GREEN TASK FORCE

"It isn't that they can't see the solution, it's that they can't see the problem."

G. K. Chesterton

"...the solution to our transportation problems is too often thought of as: How can we design a better machine to get us from point A to point B? We turn to more gas-efficient cars, to less polluting cars, even to electric cars. But no matter how we twist and turn, no matter how technically ingenious we get, in the end we cannot escape the fact that we have formulated the problem wrong. The problem really is: how do we get the most-frequented points A and points B closer together, so people can comfortably and happily walk or bicycle between them?"

Ernest Callenbach, Sustainable Cities, Concepts and Strategies for Eco-City Development

TRANSIT, TRANSPORTATION AND TRAILS:

The issue of transit as a significant component of an overall transportation strategy is controversial and thus subject to dueling PhD.s citing statistics and studies supporting diametrically opposite positions. Few argue the benefits of transit use, the controversy seems to focus on the lack of market acceptance, the inconvenience of local distribution networks and the perceived nature of most transit modes as user unfriendly. Yet despite a dearth of support, transit planning is advancing along highly focused lines, for example the on-going WRCOG investigation into transit oriented development in selected community centers throughout the county.

It was predictable that as gas prices exceeded \$3 per gallon, transit ridership would spike upwards as those at the bottom of the economic ladder felt the pinch of economic necessity and switched from cars to busses. As prices stabilize, it is expected that some portion of the increased ridership will revert to car commutes leaving the balance to complement the core of traditional riders.

Locally, Riverside is a college town and the use of bicycles for commutes and personal trips is very prevalent in and around the colleges and universities. Further, the "Safe Routes to School" program focuses on ensuring children have safe bike trails to school. And for those who prefer to walk or run, a system of pedestrian trails is under development including links to regional paths such as the Santa Ana River trail.

Transit Friendly Community Design, TOD/Transit Oasis Program, Regional Planning Coordination

WRCOG is conducting research on transit oriented development, including the transit oasis concept, adopting a market-based approach to understanding demand and potential acceptance of transit adjacent high density urban development. Transit oriented development, (TOD) was conceived as rail-based for its principle transit mode and its Riverside application is currently focused on the Metrolink station in the downtown MarketPlace. The MarketPlace is immediately adjacent to the downtown employment base, has connections to regional and local transit modes, contains parcels highly suitable for high density development and has no shortage of interested developers willing to pursue TOD projects.

Various proposals have been advanced recently involving the return of fixed rail transit to long abandoned rights-of-way, e.g., Magnolia Ave and the downtown trolley line. While the cost/benefit analysis has yet to be conducted for the re-birth of fixed rail transit systems, the "transit oasis" concept was developed specifically for low density, suburban neighborhoods and addresses the critical issues of frequent headway, ease of access, user perception as a rail based system and the use of existing roadways and/or inexpensive paved rights of way.

The single focus solution to congestion of adding highway miles is likened to solving obesity by adding notches to one's belt, which while temporarily comforting, does nothing to address the cause of the problem. Not only do we devote enormous amounts of land to the driving and parking of automobiles, the pollution and congestion they cause have both societal and

economic costs as well. Yet for all that, a functional, attractive and user-friendly mode, especially for local transit, has yet to be created. Clearly the bus, while functional, fails in most user's assessments on the beauty and convenience criteria. We propose the city begin to think about "transit adaptive" development in which consideration for future retrofit is designed into the basic fabric of the community infrastructure.

All transit planning, however, is at least partially dependent on creating neighborhoods at densities above the 3-4 dwellings per acre so prevalent in contemporary suburbia. Densities between 6 and 10 dwelling per acre begin to become economically feasible for transit, above 10 dwellings per acre can normally be made to function within cost/benefit parameters involving minimal subsidies. We believe the General Plan review should include providing higher densities around neighborhood centers so that future transit installations will have a "built-in" user base.

POLICY AND PROGRAM RECOMMENDATIONS

Support WRCOG's investigation of transit oriented development and the transit oasis as viable development paradigms with funding, staff support and coordination of interest group participation.

Give the revival of local fixed rail systems an honest and deliberate review.

Review the General Plan and the city's contributions to regional transportation planning in terms of transit adaptive development parameters, that while not immediately necessary will provide the needed infrastructure for future retrofit.

Where appropriate, review land use policies for increased densities in neighborhood centers as a critical component of creating the "critical mass" needed for economical transit operations.

Pedestrian and Bicycle-Friendly Goals, Policies and Actions

By adopting a philosophy that incorporates Pedestrian and Bicycle-Friendly Principles the community, City Staff and developers will:

- Understand the City's vision embodied in the Goals, Policies and Actions.
- Have a foundation to shape Riverside into a more walkable and bike-able community as it grows.
- Implement capital improvements that incorporate these principles.

Goals will follow the Principles and provide a sense of direction. Policies will set a framework to work towards adopted Goals. Actions will implement the Goals and Policies and will bring Riverside closer to the vision embodied in the Principles.

Pedestrian and Bicycle-Friendly Goals

- Create a continuous network of walking and bicycle routes that enable people to walk and bike throughout Riverside.
- Enhance pedestrian and bicycle safety on existing streets and roads and create safe walking and biking environments on new streets and roads.
- Mold new land development into walkable and bikeable neighborhoods.
- Encourage more people to walk and bike in Riverside.

Pedestrian and Bicycle-Friendly Planning Principles

Design all street improvement projects in a comprehensive fashion to include consideration of street trees, pedestrian walkways, bicycle lanes, equestrian pathways, signing, lighting, noise and air quality wherever any of these factors are applicable.

Consider the implementation of off-street shared parking with parking signage improvements, consolidation of driveways, installation of raised landscaped medians, bus turnouts, traffic

signal enhancements, special pavement treatments at pedestrian crossings and intersections, curb extensions, signalized/enhanced crosswalks, wider sidewalks and other appropriate measures which enhance traffic flow, transit efficiency and pedestrian movements. (Along the Magnolia Avenue/Market Street corridor).

Work with local school districts to identify safe routes to all schools, enabling better school access by cyclists and pedestrians. Support the establishment of safe drop-off and pick-up zones around schools during the morning and afternoon peak hours.

Promote walking as a safe mode of travel for children attending local schools.

Apply creative traffic management approaches to address congestion in areas with unique problems, particularly on roadways and intersections in the vicinity of schools in the morning and afternoon peak hours and near churches, parks and community centers.

Incorporate bikeways and pedestrian trails and bicycle racks in future development projects.

Provide properly designed pedestrian facilities for the disabled and elderly population to ensure their safety and enhanced mobility.

Identify and seek to eliminate hazards to safe, efficient bicycle or pedestrian movement citywide.

Promote the health benefits of using a bicycle or walking as a means of transportation.

Encourage pedestrian travel through the creation of sidewalks and street crossings.

Maintain an extensive trails network that supports bicycles, pedestrians and horses and is linked to the trails systems of adjacent jurisdictions.

Optimize links between trails and major activity centers, residential neighborhoods, schools, shopping centers and employment centers.

Provide adequate connections between elements of Riverside's park system.

- Adopt and implement pedestrian-friendly guidelines for sidewalks along all types of streets.
- Adopt and implement pedestrian-friendly guidelines for street crossings.
- Adopt and implement guidelines for disabled access.
- Incorporate pedestrian and bicycle guidelines and standards for new development into appropriate planning documents.
- Assist developers to understand the City's vision, development guidelines, sidewalk guidelines, and street crossing guidelines.
- Develop a capital improvement list of projects that will improve walkability and bikeability on existing streets and roads.
- Promote walking and biking in Riverside with publicized and organized walks/rides, safety education programs, enforcement of traffic laws and other ongoing programs.
- Consider creating new districts for new pedestrian and bicycle-oriented areas that incorporate planning principles and streetscape plans.
- Adopt narrow standards for street and lane widths, while considering the need for street width for public safety and bicycle travel.
- Identify, map and publicize a network of well-signed trails.
- Development a strong sense of place in Riverside by taking advantage of our historical landmarks and natural features.
- Focus new development in neighborhood villages and near colleges where pedestrian and bicycle-oriented and transit-oriented developments are practical.
- Seek opportunities in appropriate places to enhance the environment with streetscape features such as:

- Bus shelters
- Canopy trees and landscaping
- Benches and street furniture
- Colored or textured pavers (smooth in the Pedestrian Through Zone)
- Attractive street lights
- Attractive trash and recycling receptacles
- Attractive, consolidated news racks
- Clocks
- Public Art
- Banners and Flags
- Fountains
- Information kiosks
- District-wide logo/signage program

POLICY AND PROGRAM RECOMMENDATIONS

Pedestrian and Bicycle Friendly Actions

Pedestrians and bicyclists require safe and physically suitable environments to enjoy and contribute to the dynamic of urban and neighborhood street life. Pedestrians should be able to utilize local streets with the same assurances and convenience as motorists. Separation of pedestrian and bicycle traffic from the street increases as the street hierarchy rises to collectors, arterials and major streets. Where pedestrians and bicyclists must use the street for crossings or activities, very specific and careful design treatments are required to control the speed and flow of cars and ensure pedestrian safety.

Recommendations for Physical Improvements

Existing sidewalks and streets can be enhanced with a variety of improvements to make the pedestrian and bicycle realm safer and more inviting.

- Starting with the priority areas, the City should develop a citywide project list to enhance the pedestrian and bicycle environment in every neighborhood. This list shall include capital improvements at intersections, sidewalk improvements and traffic calming strategies.
- Downtown Riverside should be designated as a priority area where pedestrian and bicycle safety and movement is considered more important than through motor vehicle movement. This can be done by ensuring that the timing of traffic signals slows motor vehicle traffic and discourages through traffic from using downtown streets.
- A good pedestrian and bicycle connection is needed between Downtown and the Metrolink/Amtrack station

Adapted from Walkable Community Task Force Report – City of Riverside, May 2005.

Bus Transit

More people should get in the habit of using the bus. However at present, everyone supports transit...for the other guy. Most will find using the bus made take a bit longer but is easier on fuel use, our bank accounts and on our health.

Remember that all RTA buses have bicycle mounting brackets on them;

Local leaders and city staff should work with RTA staff to develop and enhance:

- Connectivity between neighborhoods and transit routes;
- Pathways between the interiors of projects and the surrounding arterial streets where transit is likely to operate;
- Connectivity between commercial, academic and entertainment districts with the transit system;
- Connectivity between the bus routes and other transit modes;
- High-density transit corridors along selected major arterials;
- Continue to work for traffic signals that let the bus skip the red light;

- Where feasible, design projects to include distinct transit-dedicated lanes
- Continue to emphasize transit in documents such as General Plans by inclusion of a “Transit-Friendly Community Design” section;
- “Smart Transit” features like electronic signage, “next-bus technology” and GIS tracking of buses
- Include RTA staff in developing neighborhood and city plans, especially at the community-involvement level

POLICY/PROGRAM RECOMMENDATIONS

Provide area for bus amenities such as transit centers, transit nodes, bus turnouts, passenger waiting areas along bus routes;

Require review of local development projects by RTA staff to advise on transit issues;

Where appropriate, require developers to work with RTA staff on precise placement and design of transit amenities;

Local employers requested to work with transit agencies to acquire reduced ticket prices or other fare media for using transit;

Continue to seek funding sources for transit-intensive projects like GO Riverside;

SUSTAINABLE INFRASTRUCTURE: CLEAN WATER AND ENERGY

CLEAN WATER:

All new projects and whenever possible all redevelopment projects should be designed to keep storm water from running off into the storm drain system carrying the water and pollution into our waterways and out to the ocean. Instead, projects should be designed to keep as much water as possible on site to allow for penetration into the soil to filter and clean the water and recharge the aquifers. For example, small retention basins/drywells, pervious soil and paving, and landscaping can be used to minimize rainwater runoff.

Storm water runoff: Stormwater runoff is one of the classic impacts that can be addressed by standard engineering solutions and retention basins or more creatively by sustainable landscape design, cisterns and pervious paving. Required open space areas, setbacks and parks all provide ample area for designed wetlands, bio-filtration swales, underground cisterns/drywells and subterranean irrigation systems, each a component of an integrated approach to handling runoff on-site. Except for urban sites, it is reasonable to expect a zero runoff design can be achieved economically and with minimal impacts on land use and development options.

Trees and the Watershed: The Center for Watershed Protection (CWP), in cooperation with the USDA Forest Service, Northeastern Area State & Private Forestry program, is producing a three-part manual series on using trees to protect and restore urban watersheds. The contents of the manual are the result of extensive research compiled over the past year as well as two design workshops held in early 2004 that focused on using trees for stormwater treatment and planting trees in the urban landscape. These workshops were attended by more than 40 local, regional and national experts, including foresters, stormwater engineers, landscape architects, arborists, urban soil scientists, watershed planners and representatives from parks, transportation and utility companies. For details, see: www.cwp.org/forestry/index.htm

POLICY/PROGRAM RECOMMENDATIONS

That the City of Riverside require that all new and redeveloped private and public properties capture all storm water runoff and provide methods for the water to filter into the soil to replenish the water aquifers.

Sources

http://www.epa.gov/owow/nps/nps_edu/urbanx1.htm

A decent review article, "Advances In Porous Pavement", from the journal Stormwater can be accessed at: http://www.stormh2o.com/sw_0503_advances.html

An article reviewing the use of asphalt as porous pavement, titled "Asphalt: The Right Choice for Porous Pavement", is at: <http://www.betterroads.com/articles/nov04e.htm>

A review of the relative benefits and costs of various options for permeable pavement can be found at: <http://www.toolbase.org/tertiaryT.asp?DocumentID=2160&CategoryID=38>

A review of Puget Sound examples of different sorts of permeable pavement projects can be found at: http://www.psat.wa.gov/Publications/LID_studies/permeable_pavement.htm

A review of the watershed benefits of permeable pavement in the context of "low impact development", can be found at:

http://www.lidstormwater.net/permeable_pavers/permpavers_benefits.htm

Rainwater Runoff Policy Continued Page 2

A research article, titled "Long-Term Stormwater Quantity and Quality Performance of Permeable Pavement Systems", can be accessed at:

<http://www.lowimpactdevelopment.org/cenews/permeablepavement.html>

A video clip about the use of porous pavement for stormwater management is accessible at:
<http://www.greenworks.tv/stormwater/porouspavement.htm>

Links to various reports and promotional material can be accessed at:
<http://www.pervious.info/>

The Concrete Promotion Council of Northern California <<http://www.cpcnc.org/>> had a handout for pervious concrete that gives contact information for Andy Youngs (916-765-5581) and Rob Wallace (916-721-6307 or 888-633-0393).

A firm called Rubbersidewalks, Inc., can be reached at: (310-515-5314

The University of South Carolina maintains a pervious pavement research web page at:
http://www.secement.org/pervious_research.htm

A promotional pamphlet, titled Pervious Concrete: When It Rains, It Drains, can be downloaded at: <http://www.secement.org/PDFs/pervious%20concrete.pdf>

Research and analysis material on rubberized asphalt pavement can be accessed at:
<http://www.rubberpavements.org/library/>

A search using Google and the terms "pervious concrete", "porous concrete", "permeable pavement", "porous pavement" or "pervious pavement" will generate a number of hits to companies providing technical descriptions and specifications for pervious concrete, such as:
<http://www.concretenetwork.com/pervious/index.html>
<http://www.concretenetwork.com/grasscrete/index.html>
http://www.washingtonconcrete.org/industry/pervious/pervious_pavement.shtml
<http://www.stoneycreekmaterials.com/pervious.html>
http://www.gcpa.org/pervious_concrete_pavement.htm
http://www.prestogeo.com/Solutions/porous_pavement_options.html
<http://www.sspco.org/geoblock.html>

CLEAN AND GREEN TASK FORCE

ENERGY: CONSERVED AND EFFICIENT

Riverside has an aggressive public utility program to which four other components could be added to achieve real energy sustainability.

- First, conservation is founded in an expanded green building program through which reduced energy demand is achieved;
- Second, efficient equipment, appliances and systems will reduce demand and lower utility costs;
- Third, on-site generation via Photo Voltaics, pelletized generators and other low cost site specific technologies reduce demand; and
- Fourth, the expanded use of alternative fuels will reduce demand on fossil fuels and contribute to lower pollutions levels.

Energy use and generation is an area of highly focused attention, new technologies are emerging as fossil fuel prices escalate and foreign supplies become tenuous. Energy independence seems a long way off, but is nonetheless an important national goal and clearly an essential component of a national security strategy. That said, local efforts might seem less than relevant but it is clear that the combined effect of small improvements yields a powerful impact on energy use and hence, policy.

Conservation: Reduced demand is the goal and with regard to development, designing and building more effective envelopes that mitigate external environmental inputs, e.g., heat, cold, and fresh air, will result in lower design loads, in turn generating lower demand for power. Effective building envelopes are hyper-insulated, utilize passive heating/cooling features, employ sustainable landscapes and use natural functions (convection, natural ventilation, Venturi chimneys, earth as heat sink, etc.) to augment (and sometimes replace) active systems.

Efficient use: Efficiency addresses the manner in which power is used after conservation has reduced demand. In buildings this principally comes down to environmental controls and power for lighting and appliances/equipment within the structure. When buildings are built with highly insulated envelopes, the lower demand may also permit use of much less energy dependent heating/cooling systems; natural daylighting means fewer and less powerful fixtures and Energy Star appliances require less energy to cook, wash and entertain. Emerging examples include compressor-less AC systems, whole house fans, super efficient evaporative coolers, high efficiency fluorescent fixtures, low voltage illumination, etc.

Buildings with automated environmental and power system controls (smart buildings) employ highly sensitive monitoring devices combined with the sophistication of computer controlled equipment and appliances. Not only are very efficient micro-adjustments possible but certain functions can be shifted to off-peak periods.

Local generation: On-site generation of electrical power promises the potential for very substantial energy savings as PV costs drop with increased use and consumers see direct reductions in monthly utility bills. Our environment is uniquely suitable to offer maximum advantage with long daylight exposures during the summer when peak demand loads occur. It is not hard to imagine a public interest regulation that rewards (incentives, green rates, rebates and/or tax credits) home and building owners for PV use and creates disincentives (premium rates) for those who do not generate on-site power.

An interesting subset of on-site power generation relates to home owners associations (HOA) operation of common areas and facilities. As more and more projects are developed with HOAs, the ability to generate power could lower association dues and/or offset reserve set-asides. In Europe, green waste is processed into fuel pellets, burned in clean incinerators that drive generators and power small, local facilities.

Riverside Public Utilities is committed to reaching a 20% threshold of renewable power by 2015, the utility is currently providing 13%. RPU has contributed to seven local renewable power generation projects, now deliver over 28MW of wholesale power under purchase agreements and yields an annual kWh savings of \$15 million through energy efficiency programs.

POLICY/PROGRAM RECOMMENDATIONS

Conservation: Encourage and offer incentives for the use of hyper-insulation, passive heating/cooling features and other energy conserving features in the built environment.

Efficient use: Encourage and offer incentives for the use of compressor-less AC systems, whole house fans in lieu of AC, instant-on fluorescent bulbs, and other super efficient appliances, fixtures and systems.

Local generation: Encourage and offer incentives for the use of PV, co-gen, pelletized incinerators/generators, and other non-polluting energy producing systems.

CLEAN AND GREEN TASK FORCE

GREEN BUILDING PROGRAM

The following priorities are neither fixed in order nor in importance. Individual projects may well re-order the priorities, add new topics or delete some that do not pertain. The following issues have been selected as generally applicable to IE projects due to our location, climate and overall environmental circumstance.

RESOURCE CONSERVATION AND RENEWABLE MATERIALS USE

Materials (Resource) Conservation:

Because of the intense pace of residential development, even small reductions in materials use can substantially decrease or eliminate unnecessary consumption of building materials and their raw ingredients.

Maximize Longevity:

Extending the life-cycle of our homes will have a long-term material effect on the overall consumption of building materials and systems, appliances, equipment and finishes.

Minimize Construction & Development Waste:

Reducing construction waste depends on the selection of materials, construction practices and the awareness of how even small recycling efforts can result in significant material savings and re-use benefits.

Solid Waste Treatment:

Solid waste treatments range from home recycling to green waste composting to establishing new industries using solid waste as raw materials. We need to begin considering solid waste as a resource, post-consumer products could be the basis for entire new businesses and industrial expansions.

WATER CONSERVATION/TREATMENT:

Perhaps our most precious resource and the one most susceptible to annual fluctuations is water, and while every other resource can endure temporary deprivations, water is always and continuously necessary. Since our supply is substantially imported, both conservation and treatment can play major roles in reducing demand for potable water.

ENERGY EFFICIENCY:

Energy Conservation: T24+15%, 25% overall energy cost savings, Energy Star Certification
We consume energy in so many ways that of all resources, energy is most easily impacted by individual and neighborhood actions, for better or for worse. Especially critical are the summer electricity demands made by air conditioners running day and night.

HEALTHY BUILDINGS/INDOOR AIR QUALITY:

We need to focus intently on indoor air quality because our ambient air (90% imported smog) is so polluted that our children suffer increased incidences of lung related maladies.

ENVIRONMENTAL SENSITIVITY, APPROPRIATENESS, SUSTAINABILITY:

Use Low-Impact Materials:

The increased use of low-impact materials contributes across the board to overall environmental quality and to minimizing impacts in extraction, processing, assembly, manufacture and distribution.

Reduce Auto Dependence:

Planning in such a way as to reduce automobile use in general, and to reduce the distance driven in particular will have immediate and beneficial impacts on our local air quality. This is critically important in terms of reducing cold starts and congestion idling that are both inefficient and tend to add pollution near concentrated habitations.

Protect the Site:

Where sites display valuable natural and/or unique features, preserve them to the extent possible, however, land designated for development in General Plans is already understood to be suitable for development, public open space is generally to be provided elsewhere.

FUTURE INNOVATIONS IN SUSTAINABILITY

Sustainability as a concept and green development/building as a strategy are all in their early stages of development. Every regulation and policy must remain open to new innovations as the knowledge base expands and our understanding of the issues becomes more sophisticated and comprehensive. To the extent possible, the built environment should also remain open to retrofit and adaptation.

POLICY/PROGRAM RECOMMENDATIONS

Investigate the available programs that certify buildings as meeting specific energy, waste, resource and construction standards and as appropriate adopt the programs as voluntary programs for privately funded construction and mandated programs for publicly funded civic structures.

CLEAN AND GREEN TASK FORCE

LEEDS PROGRAM AND COMMERCIAL, INDUSTRIAL SUSTAINABLE DESIGN GUIDELINES

New commercial construction and major renovation projects (LEED-NC)

Existing building operations (LEED-EB)

Commercial interiors projects (LEED-CI)

Core and shell projects (LEED-CS)

Under development:

Homes (LEED-H)

Neighborhood Development (LEED-ND)

U.S. Green Building Council (USGBC founded in 1993) – developed LEED in 1995 in response to a US market demand for a definition of “green building.” Its purpose was to:

- Become the first and last word on green buildings for its members and the building community, and
- To accelerate the implementation of green building policies, programs, technologies, standards and design.

LEED – **L**eadership in **E**nergy & **E**nvironmental **D**esign

LEED – A tool to help design teams and owners determine and develop green projects.

Provides framework to:

- Determine project goals
- Identify green design strategies
- Measure and monitor progress, and
- Document success.

Green Design is design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants that address:

- Sustainable site planning
- Safeguarding water and water efficiency
- Energy efficiency
- Conservation of materials and resources
- Indoor environmental quality

Green Design/Building Benefits

- Relatively inexpensive to build, operate, and convert to their next use, as human needs evolve.
- Placement of structures on the land affects sense of community and determines both where “we” must go, and how we can do so, to travel between the places where we work, live and play.
- Green buildings sometimes cost more to build, but not always and can even decrease first costs by saving infrastructure needs/expenses and using passive heating and cooling techniques that make most costly mechanical equipment unnecessary.
- Provides “healthy environments” as opposed to “sick building syndrome”

Environmental Benefits – Reduce impact on the environment

- Reduce destruction of natural areas, habitats, biodiversity
- Reduce air pollution, water pollution and solid waste
- Reduce depletion of finite resources
- Provide healthier and safer indoor environments
- Provide healthier outdoor environments
- Promotes personal satisfaction (doing the right thing)

Economic Benefits – Improve the bottom line

- Reduce operating costs
- Reduce project costs

- Municipal economic advantages (lower land fill, water, and treatment needs/infrastructure)
- Enhance asset value & profits

Health and Safety Benefits – Enhance occupant comfort

- Improve productivity
- Reduce liability

LEED Use

- Global Use – in foreign countries
- Federal Use – General Services Administration – requires minimum LEED Certified goal for projects beginning in 2003
- California – currently considering LEED adoption and development of California LEED Supplement for State project
- University of California has adopted a LEED Certified Equivalent standard for facilities
- Local Governments are adopting LEED standards

LEED Rating System - Five sustainable categories of concern plus design process and innovation for seven prerequisites (necessary to perform in all or cannot obtain LEED ranking). For buildings to gain LEED certification (or higher) a building must address:

- Sediment & Erosion Control
- Minimum Energy Performance
- Fundamental Commissioning
- CFC Reduction in HVAC Equipment
- Minimum IAQ Performance
- Environmental Tobacco Smoke Control

LEED Point Distribution – Not every point will be applicable to every project

Credits	Environmental Category	Points
8	Sustainable Sites	14
3	Water Efficiency	5
6	Energy and Atmosphere	17
7	Materials and Resources	13
8	Indoor Environmental Policy	15
		64
	Design Process and Innovation	4
	LEED Accredited Professional	1
	Total Points Available	69

LEED Certification Awards

- LEED Certified 26-32 points
- Silver Level 33-38 points
- Gold Level 39-51 points
- Platinum Level 52 + points

POLICY/PROGRAM RECOMMENDATIONS

Establish LEEDs levels (or equivalent) for municipal projects.

Adopt green utility rate programs and other incentives for private projects that reach LEEDs levels, the higher the performance, the greater the incentive.

RESOURCES

USGBC Website/LEED information – www.usgbc.org

CLEAN AND GREEN TASK FORCE

GREEN BUILDER PROGRAM AND RESIDENTIAL SUSTAINABLE DESIGN GUIDELINES

Approximately one half the area of communities is devoted to residential use. Even small, incremental improvements in sustainable development can yield significant benefits. Green builder programs are the residential equivalent of the LEED program for commercial, industrial and institutional development.

On leadership Gandhi said, "*There go my people; I must rush to catch up with them, for I am their leader.*" Leadership in sustainability involves following those who are committed to a sustainable future and facilitating their efforts and making the benefits available to all. Adopt a Riverside residential "green builder" program and focus first on market-rate merchant builder housing, principally because the industry is already rapidly moving in that direction. Linking a local program with appropriate incentives (density bonuses, fee relief, streamlined processing) will attract the residential merchant builder, the constructor of the vast majority of homes available in the marketplace.

Retrofit of sustainable materials, features and systems to the existing housing stock, may in the long run actually have more potential to achieve a sustainable future than designing green new housing. Riverside may not be fully built out, but the majority of its maximum potential housing units are already constructed. As such, retrofit and redevelopment can combine over time to make a powerful difference in energy efficiency, resource conservation, construction waste handling and the use of renewable, recycled and salvaged materials.

The most efficacious programs involve exceeding local, regional, state and federal standards by substantial percentages, e.g., exceed California Title 24 energy requirements by a minimum of 15%, which is a significant improvement since California already has very high energy standards.

CBIA Green Builder program

NAHB Model Green Home Building Guidelines

LEED Home Rating Program

POLICY/PROGRAM RECOMMENDATIONS

Investigate the various programs in use and select the one best suited for Riverside. Adopt policies to reward residential development that conforms to the various levels of performance, linking increased performance to elevated rewards/benefits. In particular, consider density bonuses for projects achieving specified levels of sustainable performance.

While LEED Home and LEED Neighborhood programs both remain in the review/revisions cycle, the California Energy Commission has recognized the CBIA Green Builder program for its genuine incentives and measurable criteria that begin with a 15% increase in energy performance over Title 24 standards. Recognized for its cost-effective approach, the program also addresses water conservations, use of renewable resources and improved indoor air quality. As of mid-2006 approximately 1,300 homes that comply with the standards have been constructed with another 5000 on the boards.

CBIA CALIFORNIA GREEN BUILDER PROGRAM

<http://www.cbia.org/index.cfm?pageid=1243>

NAHB MODEL GREEN HOME BUILDING GUIDELINES

http://www.nahb.org/publication_details.aspx?publicationID=1994§ionID=155

LEED HOME RATING SYSTEM

<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=147&>

CLEAN AND GREEN TASK FORCE

WORKFORCE GREEN HOUSING

Promote and sponsor green housing to meet affordable housing requirements in RDA assisted projects. As monthly bills are reduced, the level of public support could conceivably be reduced, including energy efficient mortgages.

Carport PV installations

Sustainable Mortgages

REPORT FORMAT

ISSUE

AFFORDABLE GREEN HOUSING

Promote and sponsor green housing to meet affordable housing requirements in RDA assisted projects. As monthly bills are reduced, the level of public support could conceivably be reduced, including energy efficient mortgages.

ARGUMENT

Builders often claim that building green is too expensive and that they can't afford to incorporate the green features. They also claim that when they increase the cost of the home, they lose the lower income families who can't qualify for the higher priced home. Although it is possible to add costs that exclude buyers, studies have shown how to add the features that customers want and increase the percentage of buyers who can qualify for the home. In fact, Fannie Mae, FHA and others offer Energy Efficient Mortgage programs that are specifically designed to expand homeownership opportunities while promoting the design, constructing and purchase of more environmentally efficient homes

Riverside could encourage and support green building through the planning process in those developments requiring or qualifying as affordable housing.

RESOURCES

GREEN AFFORDABLE HOUSING COALITION

www.frontierassoc.net/greenaffordablehousing/Index.shtml

Architects Institute of America

www.aia.org/hs_crit_toptencrit05

Global Green Housing Initiative

www.globalgreen.org/greenbuilding/GAHI.html

National Association of Home Builders

www.nahb.org/

Fannie Mae Affordable Housing Solutions

www.fanniemae.com/housingcommdev/solutions/environment.jhtml

FHA Energy Efficient Mortgage

www.hud.gov/offices/hsg/sfh/eem/eemhoq96.cfm

Global Green USA

www.globalgreen.org

Building Green.com for Homebuilders

www.buildinggreen.com/menus/builderCategories.cfm

MODELS/EXAMPLES

The City of Riverside is leading by example with two Photovoltaic projects to convert sunlight into electricity.

Building America projects built under the DOE program to encourage energy efficiency include a 52-unit development in Carbondale, Colorado, that relies on energy efficiency to make single- and multi-family homes affordable for residents.

Casas de Don Juan are two single-family homes built in Santa Fe, New Mexico, as part of an affordable housing program. The homes include natural lighting, energy efficiency, on-site water catchment and the use of locally-available materials.

Cascadia Resource-Efficient Home Plan is a resource-efficient affordable home plan that is available for sale, or free to nonprofit organizations. It is designed to use 20 percent less energy per year than a comparable house built to Oregon code, both preserving the environment and saving money. Demonstrations of the plan have been built.

Emeryville Resourceful Building Project is a three-unit affordable housing project in Emeryville, California, that incorporates resource and energy-efficiency measures; use of recycled, durable, non-toxic building materials; and job-site recycling.

Erie-Ellington Homes (pdf) is a 50-unit, low-income housing development in Boston, Massachusetts, that incorporates energy efficiency measures, manufactured components to reduce waste and labor costs and infill of existing neighborhoods.

Good Neighbors: Affordable Family Housing is a website that includes case studies of affordable housing developments in five regions of the United States. The projects profiled emphasize participation in long-term community planning as a strategy for improving community livability.

HUD Best Practices' Case Study Book - Communities at Work: Addressing the Urban Challenge profiles the winners and finalists in the National Excellence Awards for The City Summit (Habitat II).

Jackson Street Village, an affordable housing complex built on a reclaimed brownfield site in St. Paul, Minnesota, uses energy-smart materials and practices to keep residents' utility bills low while promoting environmental and human health.

Low-Income Housing Rehabilitation for Sustainability and Affordability describes a renovation project at Johnson Creek Commons, a 15-unit apartment complex near Portland, Oregon. Johnson Creek Commons was built in 1973 and rehabilitated in 1998 with sustainable materials to provide affordable housing. The project report is provided in PDF format.

Natural Habitat profiles the energy-efficiency features of a Habitat for Humanity house in Lynchburg, Virginia.

North Carolina Solar Center explains this state clearinghouse for solar energy information, education and technical assistance. Its programs include the Energy-Efficient Affordable Housing Program, which offers home builders assistance with implementing energy-efficient technologies by providing design reviews, energy audits and help in the actual construction of the home.

PATH Technology Inventory links to a number of innovative housing projects throughout the U.S. that accomplish durability, quality, environmental performance, energy efficiency and

affordability. Specifically, the PATH Concept Home demonstrates advanced technologies and building practices that hold potential for making home design and construction more efficient, predictable, and controllable. These methods will result in cost savings that will make homeownership available to an estimated 90 percent of the population by 2010.

The Sustainable Development / Affordable Housing Pilot Program of the New Jersey Department of Community Affairs Division of Housing and Community Resources is determining how to incorporate sustainable design principles and energy efficiency into affordable housing through demonstration projects

POLICY/PROGRAM RECOMMENDATIONS

Provide support to developers for green affordable housing.

Remove unnecessary regulatory hurdles.

Incentivize green affordable housing development.

Provide links for education and information on Riverside Clean and Green website.

Encourage local lending institutions to provide Energy Efficient Mortgage products.

COST/BENEFIT SUMMARY, SUCCESS MEASURES

Well designed housing meeting multiple goals of energy efficiency, health, durability and low environmental impact.

Can contribute to community acceptance and perceived quality of affordable housing.

Lower operating and maintenance costs.

Leading to more stable, owner-occupied communities.

Where public agencies partner with rental property owners to develop affordable multifamily housing, lower operating and maintenance costs protect public investments.

CLEAN AND GREEN TASK FORCE

CITY FUNCTIONS:

When the city adopts a Sustainability Ethic and commits to a sustainable future, it is bound to practice sustainability and fortunately, the breadth of city functions provides fertile ground for a wide spectrum of programs. The City of Austin, Texas has been a national municipal leader in sustainable action, including assessing local government operations toward identifying methods and practices to make the governmental functions themselves more sustainable.

"A Guide to Green Government (1995) was designed as a framework to guide and assist federal departments in the preparation of their sustainable development strategies. The Guide, signed by the Prime Minister and his Cabinet, helps departments to identify their sustainable development objectives and develop the action plans to achieve them. The framework acts as a guide rather than a prescription, since federal departments differ greatly in their mandates. At the same time, the Guide is designed to ensure a degree of consistency in the way that departments approach the preparation of strategies. The aim of the framework is to integrate sustainable development into the workings of the federal government – right across the board and to see that environmental and economic signals point the same way."

A Guide to Green Government, Environment Canada Green Lane

"The goal of the Departmental Sustainability Assessment Project (DSAP) is to systematically examine and assess the sustainability implications of the day-to-day and long-term operations and policies of all City departments. Specifically, the environmental, social, and economic impacts of each department are examined."

City of Austin, Sustainable Communities Initiative Activities Report - November, 1998

"When asked about the motivation behind implementing green policies, facilities managers reported concern for improved employee health and productivity, cost savings, environmental responsibility, reduced liability, and life-cycle cost strategy."

2005 Sustainability Study, International Facility Management Association

POLICY AND PROGRAM RECOMMENDATIONS

Departmental Sustainability Assessment:

The Departmental Sustainability Assessment (DSA) creates a benchmark definition of current policies, programs and practices. The follow-up is an evaluation of potential new and/or expanded programs to address inadequately performing components of the city government. Consulting firms are available to conduct such assessments or with the hiring of a Director of Sustainable Action, the surveys could be conducted in-house.

City assisted "Sustainable Business Assessments":

Sustainable Business Assessments focus on assessing the degree to which a particular business operates sustainably. Such assessments take the same form as the DSA organized into both vertical issues (global to local) and horizontal operating elements.

Office of Sustainable Action: (see Public Policy)

Create an Office of Sustainable Action; appoint a Director to 1) oversee and coordinate the City's internal efforts at becoming a more sustainable government and 2) to advise and assist our citizens in achieving sustainability, particularly in assisting builders and developers in making their projects more sustainable.

GREEN GOVERNMENT

Sustainable Purchasing Policy:

Executed properly, sustainable purchasing can reduce the consumption on non-renewable resources; control the consumption/waste cycle; improve environmental health and indoor air quality; reduce corporate risk and reduce operational costs."

"A city's purchasing policies and procedures should use every available opportunity to

promote the long-term health and prosperity of area residents and to help us take responsibility for all of the impacts of our consumption. To that end, purchasing agents should incorporate the following guidelines as they seek out the best overall value:

- *account for long-term social, environmental, and economic externalities by using a life-cycle cost analysis;*
- *avoid the use of toxic or potentially toxic materials;*
- *switch to recycled and recyclable materials and products;*
- *minimize the use of natural resources and embodied energy;*
- *maximize the employment of and investment in human resources;*
- *support businesses that pay living wages and have good human relations records;*
- *preserve and enhance local character;*
- *encourage diversification of the local economy; and*
- *support local and historically under-utilized businesses."*

Source: City of Austin

Waste Treatment:

Sustainable solid waste management practices can reduce the negative impacts of landfill sites; convert waste products into recycled and salvaged materials; reduce greenhouse gas emissions; and offer new employment potential in waste recycling, treatment and the manufacturing of post-consumer products.

Water Conservation and Sustainable Wastewater Treatment:

An assured water supply is an absolute requirement for sustainable living, conservation can reduce consumption, freeing up the resource to serve additional consumers; effective treatment of wastewater can replenish aquifers, process stormwater runoff and grey-water in local low/soft-tech treatment facilities creating a virtually inexhaustible irrigation supply.

Energy Efficiency

As a municipal utility, Riverside serves as both producer and consumer of electrical energy. Increasing Riverside Public Utilities commitment to renewable energy sources combined with a consumer based energy efficiency program will yield doubled benefits. The emphasis should be on the consumer side of the sustainability equation in terms of equipment and appliance efficiencies, well-insulated and passively protected buildings, utilization of effective HVAC systems and practices and the maximum use of local and project based power generation facilities.

Incubator and Business Support

This is the other side of the sustainable business coin, not about operating sustainably but producing sustainable goods and services. Among others the alternative energy sector has rather obvious potential. The alternative energy sector of international trade is expected to grow by 30% a year for the next decade, venture capital is expected to match that growth in the green industrial sector for the foreseeable future.

Global forces are driving this expansion fueled by rising energy costs, the economic growth of India and China and the urbanization of the third world compounded by the increasing awareness of global environmental issues like the melting of polar ice caps and glaciers, the loss of rain forests and the inevitable exhaustion of fossil fuels. Sustainable industry is one of the growth markets for the new generation and with a reasonable margin of accuracy, for the next century as well.

"This field of green tech could be the largest economic opportunity of the 21st century. There's never been a better time than now to start or accelerate a green-tech venture."

LA Times, April 11, 2006

John Doerr, Kliener, Perkins, Caulfield and Byers on pledging to set aside \$100 million of investment capital for green ventures

Riverside with its four colleges and universities, CE-CERT and the relatively new UCR Center for Sustainable Suburban Development is uniquely well positioned to attract and nurture sustainable industrial enterprise.

Consider a City sponsored "Sustainable Clearinghouse" for building materials, systems and equipment, landscape materials, etc.

Code Enforcement

Not unlike immigration and gun control, it may well be the enforcement of on-the-books-statutes and regulations that could, in the short run, make a significant contribution to the quality of our culture and environment.

- hat-racking trees, etc.
- trash, refuse collection
- weed abatement
- parking lot shade requirement

Sources

Tucson, AZ: <http://www.ci.tucson.az.us/livable2.html>

Santa Monica: <http://www.ci.santa-monica.ca.us/environment>

Jacksonville: FLWeb site: www.jcci.org

Maine: <http://www.mdf.org/megc/measures/MOG2006.html>

RESOURCES

How Green Is the City?

Sustainability Assessment and the Management of Urban Environments
Edited by Dimitri Devuyst with Luc Hens and Walter De Lannoy
paper, 488 pages, ISBN: 0-231-11803-1, Columbia University Press

CLEAN AND GREEN TASK FORCE

SUSTAINABLE ENTERPRISE

Sustainable enterprise produces green goods (materials, systems, equipment, etc.) and/or provides green services as designers, managers, analysts, etc. Current projections for sustainable industrial growth are pegged at 30% annually, doubling every three years in what is arguably one of the fastest growing sectors of the economy. As the fastest growing region in California, the inland counties are primed for locally produced building and landscaping materials and systems and new homeowners and university graduates will likely find such businesses desirable for short commute employment. Since growth also generates waste, new sustainable treatment technologies and recycling operations should find a receptive market for quality recycled goods and services.

SUSTAINABLE BUSINESS DEVELOPMENT

New technologies have created new businesses which either use recycled products to develop new products or reduce solid waste to base resources. The city could develop light and heavy industrial areas and encourage such businesses to locate within the city to not only add to the greening of the city by dealing with existing and future solid waste but also create new revenues with resource production.

Solid waste collection and management including hazardous waste is a large concern of any organization be it a school, city or county. To be able to divert large portions of waste into recycling programs or products reduces the need for landfill capacity or large expense to haul it away. Creating or encouraging businesses that transform solid waste into fuel, compost, base resources and other recycled materials would not only help the city with its own solid waste stream but it could help define the city as proactive in dealing with hazardous waste.

GREEN MANUFACTURING

City sponsored "clearinghouse" for sustainable building materials, systems and equipment, landscape materials, etc.

RECYCLING BUSINESSES

Electric appliances, computers, electronic waste programs: www.ease-e-waste.com

City sponsored recycling and reuse enterprise (MBE, WBE, Veterans , etc.)

Composting of green waste, strong market for landscaping programs and soil amendments

Alternative Power sources

POLICY/PROGRAM RECOMMENDATIONS

COC coordination on new sustainable business acquisitions.

Analyze current green business volume and breadth of services/customer base.

Identify green business opportunities and work with COC and local universities to offer start-up and incubator assistance to those committed to the inland area.

Authorize the responsible department heads through the City Manager to pursue "pilot projects" under prescribed circumstances, following established protocols to recruit, develop, build and/or operate facilities or business that reuse, recycle, and/or strip down solid and hazardous wastes to decrease the need for landfill capacity, out-of-town transport and disposal and to provide new resource materials from strip-downs.

Approve and support HOA programs for revenue enhancement and operations/maintenance of green systems, materials and landscape.

CLEARING HOUSE FOR GREEN MATERIALS:

As demand for green building supplies increase, new products are being developed that use renewable resources as well as recycled materials. Even as new technologies are developed to reduce "solid waste", which would otherwise go into land fills, or use that waste or already recycled products, those materials are still not readily available to the public and may have a cost premium attached. The city could develop a clearing house for such resources or recycled products or could encourage the development of a private "Green Material Clearinghouse" which could supply local and regional developers as well as the private citizen with green materials at a competitive price.

It is perceived by many that green materials are more expensive, hard to find and limited in selection. A clearinghouse concept could use the power of large scale purchase of common green materials, thus reducing their unit cost for the small developer or homeowner. The clearinghouse could also act as a training location for green building concepts/products as well as develop a green building/residence and demonstration garden or nursery to display exterior and landscape "green" concepts.

POLICY/PROGRAM RECOMMENDATIONS

The City should take an active role seeking out businesses that could serve in this capacity or could have a section of their business specifically devoted to green materials with suggestions on use with proven first and second cost savings to encourage purchase of green items.

Active participation by the city could directly assist in funding construction, sponsoring planning and design efforts, and identifying cutting edge/emerging green technologies and materials.

The public interest is well served by sponsoring and participating in these types of technologies/businesses through the viability of conservation technology and its environmental and economic benefits.